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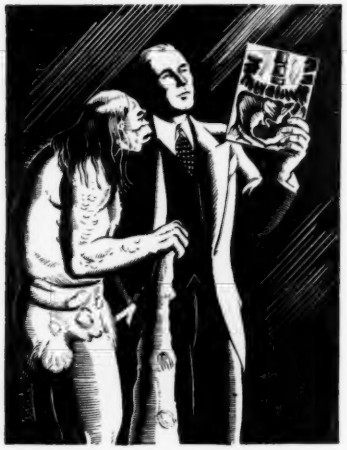

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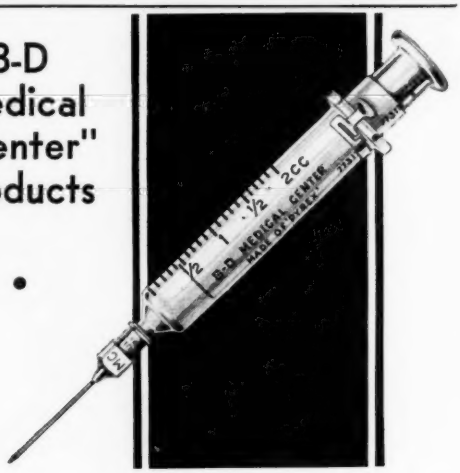

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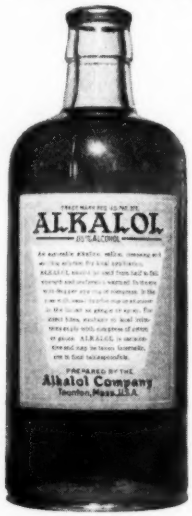

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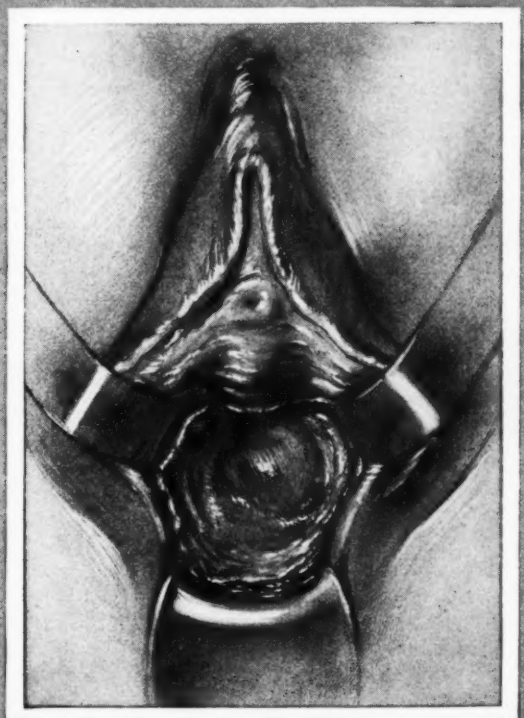

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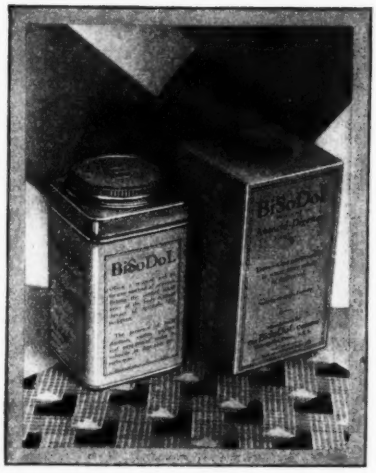

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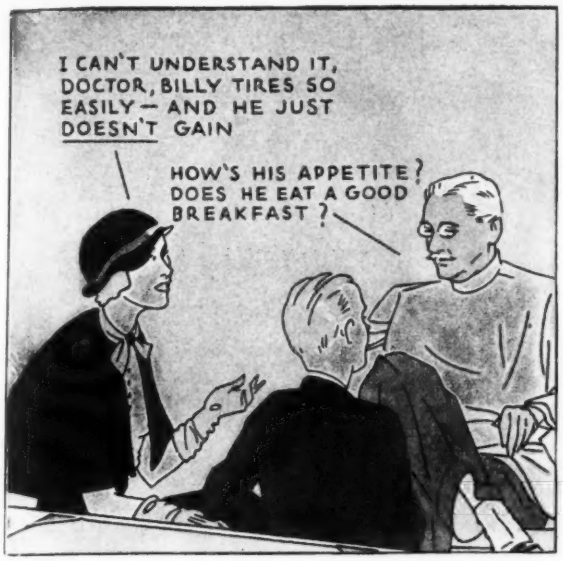

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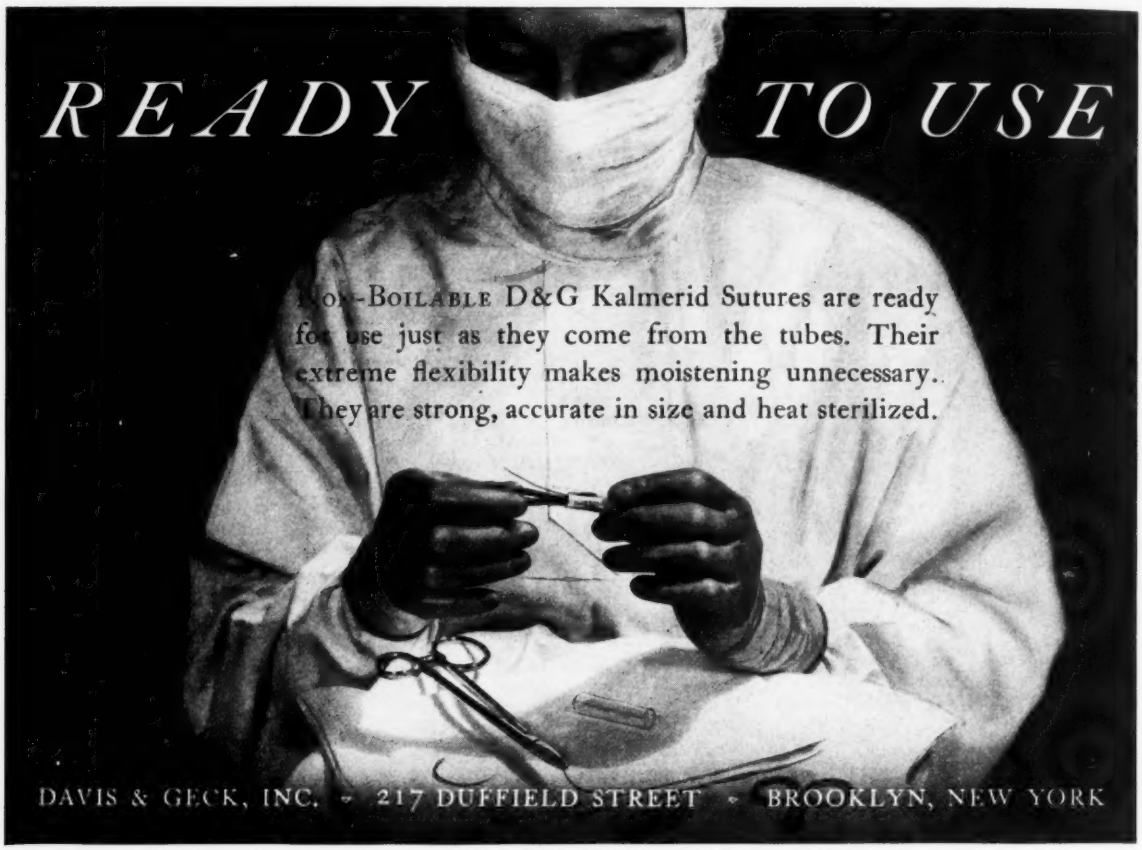
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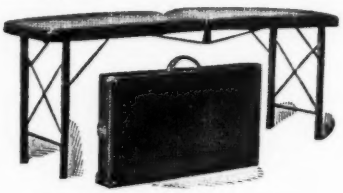

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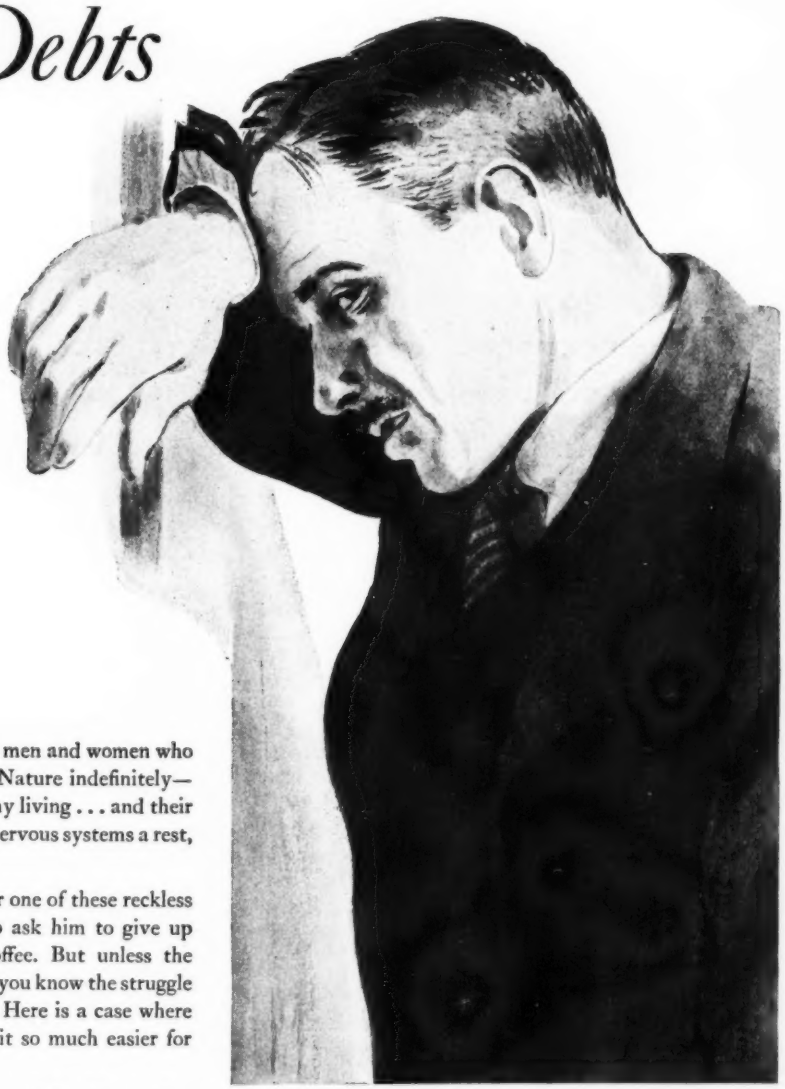

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The Journal of the American Osteopathic Association

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Some Anatomical Mechanics of the Foot

RUSSEL R. PECKHAM, D.O.
Chicago

During recent years, considerable attention has been drawn to the treatment of feet, and, as a result of this attention, many different types of treatment have been evolved, most of which have been based upon a mechanical, theoretical basis. These mechanical theories are the result of the interpretation of mechanical anatomy at the hands of different observers.

It is also a fit observation that many of these theories are based upon actual fact. But since there is a wide divergence in the theories, and since nearly all of them, when applied, result in some good, it seems possible that the different theories are based upon an over-emphasis laid upon different facts.

It is probable that the wide variation of results from the application of these theories of treatment, at the hands of different individuals, may be explained in two ways. The first and most important explanation is found in the fact that but few individuals can apply a given idea with the same degree of skill. A second explanation may be made on the grounds that those who apply a given theory are indifferently grounded in its technicalities and are, therefore, unable properly to carry out its application.

The situation has given rise to groups of supporters of the different theories and methods of treatment. In each of these groups are found men of known ability whose opinions, grounded upon their personal experiences, must be considered seriously.

The inquiring anatomist is, therefore, brought face to face with a proposition—to determine several points, in order that these different theories and opinions may be correlated or explained. If possible, he wishes to determine whether there is a common mechanical law upon which all of these theories are based; if each of these theories may be brought into harmony with this common law; if each of these theories be a complete idea; if they be incomplete, wherein may be found the flaws; if they be the result of over-emphasis of certain facts; if they be wrong; if they be right.

In a desire to face these problems, a considerably detailed investigation of the mechanical anatomy of the foot has been undertaken. The following paragraphs are not intended to summarize all present known information regarding the foot, nor to advance any particular new idea in regard to the treatment of conditions of the foot. It is only hoped and intended to bring to the aid of those individuals who are thinking about foot disturbances, some help in their problems.

It is expected that everyone interested in the treatment of feet has spent considerable time examining the articular surfaces of the bones of the feet but the writer believes it improbable that many of these individuals have had opportunity to study the mechanics of a foot in position, from fresh cadaveric specimens. The advantages of such a method are obvious.

It has been difficult to establish beyond doubt the facts enumerated, and much information is at hand in addition to that found in this paper, which seems to indicate other valuable conclusions. However, what conclusions are drawn in this paper, the writer believes may be depended upon, and with this thought in mind, all possible technical detail and method of arriving at these conclusions will be omitted.

A short summary of gross anatomical relationships follows: The force falling upon the talus from the tibia, is transmitted through it only to two other bones directly, downward and backward to the calcaneus, and forward to the navicular. That part of the force received by the calcaneus, in turn is transmitted downward to the surface upon which the foot rests, and forward and slightly laterally to the posterior aspect of the cuboid. That is, the force which is distributed backward from the talus, is transmitted through the calcaneus either to the floor, or the lateral side of the arch.

All force which is distributed directly forward from the talus, passes to the navicular. From the talonavicular articulation and the cubocalcaneal articulation forward, the foot may be considered as consisting of medial and lateral longitudinal arches. These longitudinal arches would comprise in total the following: the medial—of calcaneus, talus, navicular, three cuneiform, and the medial three metatarsals; the lateral from behind forward—the calcaneus, cuboid, lateral two metatarsals. But continuing further, let us consider for the sake of argument and explanation, that these two arches might function separately from each other. It can be seen that by changing the position (rotation) of the talus upon the calcaneus, that the medial and

lateral arches might be actually separated somewhat, or forcibly opposed one to the other.

At this point, let us consider the talocalcaneal articulation. This articulation consists of two separate cavities. The smaller of these is on the anteromedial aspect of the calcaneus. This facet is convex or concave in all directions, apparently designed to furnish an axis for a rotation between talus and calcaneus. A small flat facet is often present in addition to the above and furnishes additional gliding surface.

The posterolateral articular surface of the calcaneus is many times larger than the anterior medial one. Its general outline is that of a broadened out crescent. Frequently the surface is divided into parts, in which case the contours and outline of the combined surfaces simulate those where the surface is single. The curved outline of this crescent might be described as forming a segment of a circle, the center of which is the small anteromedial articular surface, which was described above as the axis for rotation of the talus on the calcaneus.

However, the contour of this large articular surface, when viewed from the side, would seem to prevent any great amount of such rotation. From behind toward the front, the surface shows a deep concavity, and then a gradual convexity. That is, the calcaneus might glide forward and back under the talus within very slight limits, without forcing the calcaneus and the talus to separate. When the calcaneus on a fresh specimen is depressed, it is seen that the calcaneus does glide forward in this manner. No such anteroposterior gliding is seen to take place in the small anteromedial facet.

The valuable points to be noted from these observations are that the anterior arches of the foot are provided with a small amount of assistance in their accommodation to each other by a limited though positive rotation between the calcaneus and the talus, and that this rotation *normally* occurs around an axis of rotation located in the small anteromedial facet.

It is well to remember that the strongest single ligament of the foot is between talus and calcaneus, holding the talus down on the calcaneus. This ligament consists of a great number of short fibers whose cross-section is equal to one-half that of the tendo calcaneus. The ligament lies in the interval between, and separates the two articular cavities described, thus permitting great freedom of motion of either, without permitting separation of the two bones involved. Herein possibly lies the most valuable finding of our study.

That an exaggerated rotation between the calcaneus and the talus does occur, and constitutes lesion, has been determined through careful examination of a great many feet. It only remains to determine the nature of the displacement, and some of its most immediate causes, to have made this finding of practical value.

Three points need to be mentioned to show the type of displacement which could occur. Neither of these articulations have supporting or limiting ligaments other than flaccid capsules. Both these joints are limited by the same factors. First the talocalcaneal ligament; second, the size and contour of the articular facets; third, the length of the leverages through which the forces are applied.

Considering these factors separately in relation to this articulation, we observe that since the talocalcaneal ligament is common to both, its influence on each would be equal. The contours of both represent a concavity opposed by a convexity, but since the total rise of the convexity of the lesser articular surface, is much less than the total depression of the larger articular surface of the calcaneus, it seems probable that if displacement amounting to lesion were to occur, it could occur more readily by mal-relationing the lesser articulation, for the very simple reason that displacement of the lesser articulation could occur and cause less actual separation of the calcaneus and the talus.

The third point, or that of leverages, further emphasizes this idea, because the leverage arm is greater from the tuberosity of the calcaneus to the lesser articular facet than to the larger or lateral articular facet. Hence traumatic force would endanger the lesser or anteromedial joint most.

These points lead us to conclude that although the normal axis of rotation is centered around the medial facet, if undue strain or force is applied, adequate to produce displacement, this excessive displacement more readily occurs in the lesser articulation. That is, the axis of rotation changes to the larger or posterolateral joint, *and the medial side of the calcaneus may move forward or backward beneath the talus, and become somewhat fixed in its malposition. This is a condition of lesion.* This, however, does not necessarily mean that all movement is destroyed between calcaneus and talus, but rather indicates that limitation of certain types of movement is present (illustrations 1, 2, 3).

Let us examine those factors entering into the production of this displacement. First, and most important, must be traumatic force, illustrated best by turning of the ankle. There are several types of injury which might be classified under this heading, and which, obviously, would represent a primary cause in the development of this displacement. It is probable that the greater number of these displacements do result from such primary causes, but not all displacements of this type can be accounted for in this manner. There are other etiological factors to be considered. That is, there are other factors which impose a condition upon this articulation which sooner or later weaken the joint through continuous malapplied force, and which impose a condition upon its normal movement which will not permit it adequately to protect itself when normal forces are applied to it.

It is under this classification that the mechanical relation of the fibula to the talus claims attention. An examination of the ankle joint shows the talus fitting into a horseshoe-shaped cavity formed by tibia nnd fibula, which permits an anteroposterior rocking movement. It would seem upon superficial examination that the fibula was of little importance in this articulation, its greatest function being to keep the talus properly opposed to the articular surface of the tibia. Experiments to demonstrate its actual relationship, reveal a considerably different function. It will be noted that the part of the medial malleolus which furnishes an articular surface for the talus is extremely small and presents no definite ridges, convexities, or concavities which would tend to hold any part of the talus in any particular position. Whereas the articular surface of the fibula which faces the talus is approximately three times as great as that described, and pre-

Drawings by D. O'Neil, C.C.O., 1935

Fig. 1. Diagram of flatfoot (slightly exaggerated). (1) Primary lesion: Calcaneus forward beneath talus, and locked, illustrated by the portion of the lateral calcaneal articular surface exposed because of the lack of apposition of the corresponding articular surface of the talus. (2) Compensatory lesion between the anterior articular surface of the talus and the posterior articular surface of the navicular (part of the articular surface of the talus not covered by opposing surface of navicular). (3) Compensatory lesion of the cubocalcaneal articulation. Again the partially apposed articular surfaces and the dropping of the lateral longitudinal arch.

Fig. 2. Lateral view of typical male flatfoot, compensation mainly in the lateral longitudinal arch. (1) Primary lesion (2, 3, and 4), compensatory lesions (secondary).

Fig. 3. (left). Anteroposterior view of typical broken arch, the high heel shoe foot of women. Secondary compensatory lesions mainly in medial longitudinal arch. Primary lesion, calcaneus backward beneath talus does not show in this view.

Fig. 4. Diagram of the two longitudinal arches. Medial arch-talus, navicular, 1st, 2nd and 3rd cuneiforms, 1st, 2nd and 3rd metatarsals, and corresponding phalanges. Lateral arch-calcaneus, cuboid, 4th and 5th metatarsals and corresponding phalanges. Functional for weight-bearing in the anteroposterior direction (flexion and extension of the ankle) although separated.

sents at least a well flattened surface to oppose the talus. In fact, in many instances, it has on its articular surface a well formed eminence which fits a proper depression on the talus, thus indicating that the fibula guides and directs the anteroposterior position of the talus in the ankle joint.

In corroboration of this idea, specimens were dissected, the tissues softened in order to permit free movement, and the following experiment performed. The tibia was locked in a vise, pliers were applied to the fibula, and a maximum of rotation anteriorly and posteriorly was accomplished with the surprising result that the foot was turned inward and outward through the medium of the force applied to the talus in almost exact proportion to the amount of rotation of the fibula. No exception to this phenomenon has yet come to our attention.

What would be the effect then, of rotations of the fibula upon the talocalcaneal articulation? It is only necessary to mention that even though the talus be malrelationed in the ankle joint, the muscle pull is unchanged, and the direction of force from the leg to the floor is unchanged; and to observe that if the talus be rotated in its relation to the ankle that the calcaneus and the rest of the foot has been changed in its relation to the ankle and to the floor. These two factors, muscle pull and change in the direction of force, must necessarily impose a condition upon the talocalcaneal articulation which sooner or later will attempt some type of compensation. This compensation may occur either through constant malapplied force, or as a result of traumatic injury to a joint while thus unable properly to protect itself.

But let us return to further consideration of the fibula. If rotations of the fibula are of importance, it is necessary to show how and why these rotations occur. The distal tibiofibular articulation is not a true joint, but the relations are maintained through an enormous number of fibrous bands connecting and holding the fibula to the tibia. In a sense, this is a floating joint. The fibula does not move anteriorly or posteriorly to any great extent, because of the attachments of these fibrous bands, and because the fibula rests in a groove on the lateral side of the tibia. Therefore, the condition of rotation of the distal end of the fibula is determined by its attachments at the proximal end. Here the fibula presents a slowly curved anteroposterior concave surface to articulate with a convex surface of the posterolateral aspect of the head of the tibia. The head of the fibula moves forward and backward and becomes lesioned in both positions. Should the head of the fibula be carried forward or backward by gliding over this rounded convexity of the articular surface of the tibia, it is obvious that a part of the change in the position of the fibula, when lesioned, must be a change of rotation. Practically all students of lesions of the extremities, readily admit the presence of both types of fibular lesions. Hence it is only necessary to call special attention to the factor of rotation, because of the enormity of the offense to the foot through its influence on the talus.

To return to the foot, the lateral longitudinal arch consists from behind forward of calcaneus, cuboid, fourth and fifth metatarsals, and their phalanges. The cubocalcaneal articulation has only one interesting factor worthy of mention. The articular surface on the anterior end of the calcaneus presents an elongated groove, extending from its superolateral edge medially

and downward toward the floor, to terminate at the inferomedial aspect. Into this facet is fitted an elongated ridge of the cuboid, permitting a gliding movement along the long axis of the groove, which constitutes the type of normal movement found in this joint.

An additional point may be noted in the fact that the ridge of the cuboid is elongated to extend a considerable distance underneath the calcaneus, thus effectively preventing the medial margin of the cuboid from being lifted even in lesion.

Two valuable conclusions may be drawn from consideration of this joint, one being that the lateral arch does not normally permit of free rotation, and is controlled in its relation to the rest of the foot, largely through the position of the calcaneus; secondly, that lesions of the cubocalcaneal joint may consist only of a depression of the medial margin of the cuboid, or an elevation of the lateral margin.

The medial arch consists of, from behind forward, calcaneus, talus, navicular, three cuneiform, three medial metatarsals and their phalanges. The talocalcaneal joint is of especial interest for one reason, namely, that in the practical applications of articular surfaces, capsule and limiting ligaments, it functions as a ball and socket joint. A possible exception to this might arise in that the inferior ligaments are strong enough to prevent any great flattening of that part of the arch formed by these joints. However, rotation in all directions is free, and it becomes obvious that lateral changes in the perpendicular relation of the leg to the floor are accommodated for in the foot through the rotation of the medial arch. To illustrate this point, move the anterior pole of the foot medially and it may be seen that the inner-plantar surface is elevated through rotation of this joint, and that a gliding movement of the cubocalcaneal articulation permits the lateral arch to move medially and downward.

If, on the other hand, the anterior pole of the foot is carried laterally, it will be seen that a similar gliding movement permits the lateral arch to change its position upward and outward, whereas the medial-plantar surface is depressed, and rotated downward. This is again permitted through the ready accommodation of this almost ball and socket joint.

Careful dissections of the foot have failed to show ligamentous structures competent to support the transverse arches in many different positions, unless some such accommodating mechanism were present. As a matter of fact, *a lance has been introduced between the third and fourth toes,* and these two arches have been actually separated as far back as the calcaneus, in order to demonstrate the movements of these two arches in changes of position, and we were surprised to note that this separation made little difference in the changes of position of the two arches, or in their accommodation to each other so long as the surface of the foot was kept in contact with the floor (illustration 4).

The value of these studies, from a standpoint of treatment and diagnosis, may be resolved into a few short statements: Displacements of the fibula influence the relation of the talus in the ankle joint; displacement of the talus on the calcaneus limits the possibility of coördination and accommodation of the medial and lateral arches to each other; the movement of the lateral arch in coördination is principally accommodated for through rotation in the medial arch.

Through consideration of these known mechanics, it becomes obvious that many of the so-called primary lesions of the anterior transverse arches of the foot are nothing more nor less than secondary lesions, or attempts to compensate for conditions imposed upon them by malrelationships further back in the foot, which do not permit the arches to accommodate each other, and variations in direction of applied forces. It might be said that some series of manipulations for the adjustment of foot conditions are excellent treatment of secondary lesions without giving due attention to the primary condition, and as such are somewhat palliative in their results.

This discussion has given no space to the influence of muscle on the health of the arch; nor has proper attention been given the influence of spinal and sacro-iliac lesions on the nerve impulses distributed to the tissues under discussion. The influences of footwear, and exercise or lack of it, have also been omitted. Neither has consideration been given to the lesser articulations making up parts of the medial and lateral arches. All of these and many others doubtless deserve attention and may be discussed in a later paper, although most of them have been ably treated by other writers. Some of these subjects are, at the present time, undergoing investigation in our anatomical laboratory, but at present the information at hand is not sufficiently accurate, nor sufficiently conclusive to offer to the profession.

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Food Factors in Anemia*

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The blood is one of the tissues of the body, a highly specialized tissue. Furthermore, the blood is no exception to the rule that if our tissues are to be well nourished and to function normally, the diet must be rightly balanced. In other words a diet that is made up in such a way as to keep the other tissues of the body in a state of good nutrition is necessary to furnish the food materials required to keep the blood in normal condition. However, in addition to a generally well-balanced diet there are several foods particularly essential to the maintenance of a normal state of the blood and particularly, of the red cells.

Rapidly Changing Tissue

The blood differs from all of the other tissues of the body in that it is changing rapidly. Especially is this true of the cells, and particularly of the red cells. It is a fact that we have no red cells in the body older than thirty days. There is a constant breaking down and rebuilding of these cells to the amount of no less than three to five per cent daily. It is for this reason that systemic disturbances are very early reflected in the blood stream. Thus, acute infections, by interfering with the rebuilding of the red cells, rapidly cause anemia. In the same way dietary deficiencies have a very early effect upon the red cells, the one tissue of

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the body which is constantly undergoing a rapid change.

Various Effects of Food

In considering the food factors concerned in anemia let us first consider briefly the normal nutritive conditions necessary to the proper maintenance of any of the bodily tissues; then the raw materials, as it were, for blood regeneration; next the vitamins concerned in this process; and, third, dietary errors which cause an undue breaking down of the red cells, or which interfere with their normal regeneration. Also, with our present-day knowledge of pernicious anemia no article of this character would be complete without a consideration of this important subject.

Importance of Animal Protein

Normal blood regeneration, or recovery from anemia, takes place only in the presence of good nutritive conditions within the body. That is, the body must be adequately supplied with the mixed proteins needed for tissue building, carbohydrates, fats, mineral salts, vitamins and water. As far as recovery from anemia is concerned experiments have shown that the most important of these food elements are the proteins, and particularly animal protein. In fact, extensive experiments and clinical experience have both shown that recovery from anemia takes place much more rapidly when the diet includes an abundance of animal protein.

Blood Building Proteins

Among the animal proteins the glandular portion of the animal is the most effective in promoting blood regeneration. The most efficient of these is cooked liver, next kidney, sweetbreads, and beef heart. The muscle portion of the food animal comes last in ability to relieve anemia. In this connection it is interesting to note that peaches and apricots have a high value for blood regeneration. However, this is not nearly as high as the meats mentioned. The same is true of apples and prunes.

Thus all experiments have indicated that recovery from anemia takes place more rapidly if considerable animal protein is included in the diet, and that constant blood regeneration is kept up to the normal level more easily when the individual is eating meat. In other words, the circulating tissue of our body, the blood, follows the rule of all the balance of the tissues of the body, that tissue wear and tear is more easily replaced when meat is included in the diet. As a matter of fact, the blood stream seems to be even more dependent upon meat, probably because of the rapid destruction and rebuilding which is constantly going on.

The following tables, the result of considerable experimental work in the value of various foods in hemoglobin production, are taken from McCollum's "Newer Knowledge of Nutrition" (fourth edition.)

HEMOGLOBIN PRODUCTION INFLUENCED BY DIET

DIET, GRAMS DAILY	HEMOGLOBIN PRODUCTION (2-week period) GM.
Bread, 450	3
Bread, 350	3
Milk, 450; bread, 450	3
Milk, 450; bread, 350	3
Cream, 100; bread, 350	12
Cream, 100; bread, 500	10
Butter, 100; bread, 350	10
Butter, 175; bread, 450	11
Cheese, 100; bread, 450	20
Beef muscle, 200; bread, 400	25
Pig muscle, 300; bread, 300	20
Heart muscle, 200; bread, 300	28
Codfish, 100; bread, 300	9
Fresh fish, 250; bread, 300	10
Spinach, 250; bread, 400	14
Greens, 200; bread, 300	20
Beef liver, 400	100
Beef liver, 300; bread, 300	50
Chicken liver, 200; bread, 250	75
Fish liver, 150; bread, 350	0
Beef kidney, 250; bread, 250	90
Pig kidney, 200; bread, 350	70
Chicken gizzard, 300; bread, 200	85
Bone marrow, powdered, 30; bread, 600	25
Beef spleen, 200; bread, 250	25
Brains, 300; bread, 300	25
Pig pancreas, 250; bread, 350	30
Apricots, 200; bread, 300	40
Peaches, 200; bread, 300	40
Raisins, 300; bread, 350	25
Apples, 250; bread, 350	35
Prunes, 250; bread, 350	35
Raspberries, 250; bread, 350	0

Fasting and Blood Regeneration

At this juncture we wish to call attention to the fact that in many cases of secondary anemia the blood picture shows a decided improvement while the patient is on an extended fast, provided the fasting period is not too long. In such cases the anemia is probably originally caused in good part through the excessive putrefaction of protein in the colon with the elaboration of certain proteolytic end products which have a marked depressing influence upon the blood-forming organs. After a fast of a few days the proteolytic flora in the colon is greatly decreased, and with it the deleterious influence of putrefactive products upon the blood regeneration.

A Questionable Treatment

However, the improvement in the blood picture of the individual on an extended fast is largely due to the excess of protein of a particularly desirable type which the forces of nutrition have at their disposal. The sugar reserves of the body are depleted after the first few days of a fast and the body turns to the fats and the muscle tissue for materials with which to keep the body fires burning. In order to avert, as far as possible, the serious acidosis that develops when the fats are burned in the body in the presence of an insufficient amount of carbohydrate, the body breaks down large amounts of muscle tissue to obtain the small amount of sugar that may be metabolized from it. As a result of this emergency protective process, considerable protein tissue is available, and we have, for the time being, one of the conditions necessary to the rapid regeneration of the red cells, namely, an abundance of protein in the body. And, of course, being body tissue these proteins are of a good type.

It is the opinion of the writer, however, that this is a very questionable method of improving the blood picture of the anemic. Certainly the body cannot be forced to live upon its own protein tissues for any length of time without serious depletion.

Iron

Next let us consider the problem of iron. Incidentally, this is not nearly as large a problem as was previously supposed. In fact, to attempt to cure anemia by giving large doses of iron is comparable to forcing more gasoline into the carburetor of the car that fails to run well. It is probable that lack of iron is the least important of the causes for anemia.

Iron Only in Small Amounts

In the first place the amount of iron contained in the blood is quite small; in fact it is less than three grams, or hardly one-tenth of an ounce in the entire blood volume of a healthy full-grown person. Moreover, the daily loss of iron is quite small. The body, in its economy, as it breaks down the red cells and rebuilds them day after day, uses much of the iron over and over again. It has been determined that the daily loss of iron does not exceed 1/300 of the total body content. This means that the amount of iron to be supplied by the food is extremely small. In our country there are very few diets that lack a sufficient amount of food iron.

There are other dietary considerations which enter into the matter of anemia other than obtaining an adequate amount of iron. These have to do with the utilization of the iron. In this connection it is interesting to note that a patient on the average iron tonic will take each day many times the amount of iron actually required by the body and a total amount every few days equivalent to the total iron content of the blood.

Whole wheat contains an abundance of iron, also all of the grains, including brown rice and corn. All meats contain iron in considerable amounts, particularly liver, kidney and red meats. All of the leafy vegetables are rich in iron, including lettuce and spinach, as well as green peas and nuts. Egg yolk is probably the richest of our iron-bearing foods, and the iron is in a form that is very easily assimilated.

The Pyrrole Group

Even more necessary than iron and the animal proteins in the process of blood regeneration are the organic radical compounds known as the pyrrole group.

The pyrrole group contains organic iron in large amounts, but it also contains something in addition to the iron. The pyrrole group is found in green leaves, cabbage, yellow corn meal and in the yolk of egg. It is also found in small amount in nearly all meats.

The pyrrole group is particularly abundant in the green coloring matter of plants, in the chlorophyll. Chlorophyll is an organic iron and is very closely related to the hemoglobin of the blood. It is the material from which the iron of the blood can be obtained with great ease. The pyrrole group is found in all green and yellow vegetables, in egg yolk, and in milk fat, particularly when the milk has the yellow color which it assumes in the summer when the animal is on an abundance of green food.

A Good Blood Builder

Recent extensive experiments have shown that hemoglobin formation in the growing child is accelerated even when the iron content of the diet appears to be already sufficient, by the systematic feeding of leafy vegetables in considerable amounts. The same result has been obtained by feeding egg yolk. This furnishes not only the essential pyrrole group, along with considerable organic iron, but it also carries considerable protein of a particularly good type.

Thus it would seem that one of the essentials and possibly the chief essential element to hemoglobin formation in man is the presence in the diet of the pyrrole group in adequate amounts. Just as is the case with the vitamins it is impossible for the body to build up its own pyrrole group. In fact as far as we know it is not possible for any of the lower animals to synthetize this group. Man must obtain it either from plants, or from animals that have previously obtained it from plants. The same is probably true of all of the lower animals as well.

Organic Copper and Blood Regeneration

Does the pyrrole group, so essential to blood formation, owe its property to any one particular element? The pyrrole group all carry large amounts of iron in combination which seems to be built into the red cells with considerable facility. In addition to this, recent investigations show that the effectiveness of the pyrrole group is due largely to the minute amounts of organic copper which it carries. It is thought that the copper acts as a catalyst in the building of the blood cells from the iron and proteins contained in the food. All studies in blood regeneration indicate that even though all of the food elements necessary to blood-building are present in the diet, unless the copper is also present, blood regeneration is greatly hindered. Recent experiments have shown that manganese in organic combination also has an effect similar to that of copper in promoting blood regeneration.

Calcium and Blood Regeneration

Just as calcium is necessary to good nutritive conditions in the various tissues of the body, so calcium is necessary for the normal rapid blood regeneration which prevents anemia. Calcium promotes iron utilization in the body, and even though all the other materials necessary to blood regeneration are present, with a calcium deficiency anemia develops fairly rapidly. On the other hand, with an abundance of calcium, even if there is present a deficiency of food iron, anemia develops very slowly. Under such conditions the loss of iron is greatly reduced. In other words, if the body has an abundance of calcium it apparently can use the iron over and over again with greater facility, when necessary, than when we have an excess of iron in the food with an insufficiency of calcium.

The chief calcium bearing foods are, of course, the leafy vegetables, milk, raisins and fruit juices. Among the last-named orange juice has a high calcium content.

Vitamins and Anemia

Up to this point we have considered materials which enter into the structure of the red cells. We will now consider important food factors which influence regeneration of the red cells through their effects upon the blood-making organs. The first of these substances are the vitamins. And just as adequate amounts of the various vitamins are essential to normal conditions of nutrition for other tissues of the body, so the vitamins are needed in adequate amounts to promote normal blood regeneration.

The vitamins most concerned in blood regeneration are A, B, and C. These are needed in abundance

to cure anemia once it has become established and to prevent its occurrence. Of the three vitamins, B is the most important. At least experimental animals developed anemia more rapidly when deprived of vitamin B than when deprived of either of the others.

Vitamin B and Digestion

A deficiency of vitamin B has two effects upon the body which influence at once the normal replacement of the blood cells. The first is through the digestive tract. A deficiency of vitamin B lessens the secretion of all of the cells which elaborate the digestive fluids. This, of course, interferes at once with digestion and with it we have a loss of foods needed for blood regeneration. If the deficiency is continued for a sufficient length of time there develops an actual atrophy of the mucous membrane lining the entire digestive tract.

Furthermore, in the absence of vitamin B the digestive tract loses much of its resistance to infective microörganisms with the result that there may be an active invasion of the blood by microörganisms normally inhabiting the intestinal tract, and normally held in a state of low virulence but which take on an increased virulence in the absence of vitamin B. Such bacteria definitely interfere with blood regeneration.

Vitamin B and the Blood-making Organs

The most important effect of vitamin B upon blood regeneration is its effect upon the blood-making organs themselves. It has been demonstrated that an adequate amount of B is needed in the diet to stimulate the blood-making organs to normal activity. In the absence of sufficient amounts of this vitamin, these organs become inactive and blood regeneration is materially slowed down.

Vitamin A and Anemia

The effect of vitamin A upon the blood-making organs is very similar to that of vitamin B. The experimental animals deprived of vitamin A develop anemia in much the same manner as those deprived of B. Vitamin A is essential to the health of the mucous membranes of the body, particularly to those of the intestinal tract. In the presence of an insufficient amount of A the membranes of the intestines lose their normal ability to restrain harmful putrefaction, and the absorption of putrefaction products into the blood stream. In the absence of vitamin A the mucous membranes are much more permeable to highly toxic substances resulting from putrefaction.

The toxic materials resulting from putrefaction, among which are the powerful pharmacological principals, histamine and tyramine, when entering the blood have a deleterious effect upon the blood-making tissues of the body; not only those concerned in the regeneration of the red cells, but also those which have to do with the elaboration of the white cells as well. Persistently depriving the experimental animals of vitamin A resulted in time in marked degeneration of the hemopoietic structures of the bone marrow, many of them being replaced by fibrous tissue.

In this connection it is interesting to note that Koessler (1926) produced in experimental animals a series of events which terminated in a condition closely resembling pernicious anemia, simply by a prolonged restriction of vitamin A. The deficiency of vitamin A resulted first in loss of hydrochloric acid which, in turn, permits bacterial cleavage of proteins in the stomach. Then the inundation of the duodenum with undigested and bacterially contaminated protein material results in impaired and abnormal protein cleavage in the intestine and the production of excessive amounts of putrefactive substances which in turn enter the blood and injure the hemopoietic structures in the bone marrow which eventually result in the characteristic features of pernicious anemia. Normal conditions, however, were promptly restored with the administration of vitamin A in adequate amounts.

Vitamin C is apparently not as essential to the health of the blood as to the balance of the tissues of the body. However, in all experimental animals deprived of vitamin C a marked decrease in the hemoglobin content of the blood was noted, although the number of red cells remained normal. The anemia, however, was rapidly relieved by feeding vitamin C. It is probable that vitamin C has its effect upon blood regeneration largely through maintaining normal conditions of nutrition.

Avoiding Anemia

To maintain normal blood regeneration our problem is largely one of food. A dietary regime generally recognized as being necessary to maintain the body in a state of good nutrition, at the same time goes a long way toward maintaining normal blood regeneration. First an adequate amount of protein is needed; mixed proteins including meat, with some glandular meat, and eggs. At the same time while an adequate variety of protein is needed, care must be taken not to overeat on these foods and thus to leave a considerable residue to putrefy in the colon, because of the deleterious effect which the putrefactive products have upon the blood-making organs. Vegetables, especially the leafy varieties, and fruits are needed for the iron, calcium and vitamins. Then the diet should be balanced with a sufficient amount of carbohydrate and fat. In the case of the former, an excess should be taken to maintain somewhere near the normal ratio between fermentative and putrefactive bacteria in the colon.

The Dietary Treatment of Anemia

The diet for the anemic should include a liberal supply of meats, including liver, sweetbreads, brains, and for those who like them, kidney. Also yolk of egg should be taken in considerable amounts. These foods furnish both the protein and, in the case of liver and egg yolk, the pyrrole group, needed for blood regeneration. Milk should be added to the diet in amounts that can be tolerated by the individual for its calcium and protein. The iron for the anemic should be obtained from liver, egg yolk and the green leafy vegetables. In this connection in the chlorophyll of the vegetables there is both iron, in the form closely resembling hemoglobin, and calcium.

Pernicious Anemia

This article would not be complete without some mention of pernicious anemia, inasmuch as food, liver or its extract, acts as a specific in preventing the typical exacerbation of the disease. From recent studies it has been determined that pernicious anemia is due to the loss of a specific substance manufactured in the walls of the stomach and found in the stomach, kidney and liver, which acts so as to promote the growth of the primitive red cells of the bone marrow. There seems to be considerable evidence to the effect that pernicious anemia begins some time before the actual

onset of the disease, with achlorhydria. In addition to the typical anemia which eventually develops, the patient is also subjected to a toxemia that in certain cases causes degenerative changes in parts of the nervous system.

The interesting part of this disease from the standpoint of this paper is the fact that a feeding of from 500 to 700 grams of raw liver daily very promptly brings about a change in the elaboration of the red cells with a consequent improvement in the blood picture; and that in the average case within six weeks to three months the blood picture may be brought up to normal and all symptoms except those due to degenerative changes may be relieved. Along with this, of course, there is administered the hydrochloric acid which is invariably absent in pernicious anemia.

Liver extracts are now on the market which furnish the active principle of the liver in concentrated form, so that by taking a few vials of the extract the patient will obtain the equivalent of 500 to 700 grams of fresh liver. A recent hypodermic product is offered which makes it possible for the patient to take intramuscularly in a 2 c.c. dose practically the equivalent of 600 grams of liver. The latest liver extract is one in which the liver has been treated with the gastric juice which apparently renders the extract much more potent. Preparations of the dessicated stomach have the same effect as the various liver preparations but are usually not as acceptable to the patient.

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Normalization of the Hydrogen Ion Concentration of the Colon

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Many articles and books have been written about the colon. It is not my purpose to enter into a discussion about it—I shall simply outline the results of my observations based upon clinical, laboratory, and surgical experience.

DEFORMITIES OF THE COLON

1. The colon is subject to many congenital deformities.
2. The colon may suffer many acquired deformities, as the result of trauma, adhesions, inflammations, etc.
3. Colon chemistry cannot be normalized if the deformities, congenital or acquired, pervert its function.

CHEMISTRY OF THE COLON AS TO ACIDITY OR ALKALINITY

1. The secretions of the colonic mucosa are normally slightly acid—p^H 6.7 to 6.9.
2. Fecal matter is normally slightly acid—p^H 6.6 to 6.9.
3. If the p^H of the fecal matter is 7.0 or above, the chemistry is modified and the patient shows toxemia.
4. Foci of infection in teeth, tonsils, sinuses, appendix, tubes, gall bladder, or any other part of the body may change the p^H of the secretions of the colonic mucosa.
   (a) Such cases may show the p^H of the colonic secretions to be above 7.0.
   (b) The p^H of the stools may be either above or below 7.0.
5. The stool p^H may be below 7.0 and have a highly putrefactive flora—more than 70 per cent putrefactive—normal fermentative bacteria is 50 per cent.
6. When the p^H of the colon secretions is above 7.0, the saliva, gastric juice, and intestinal juices also vary from the normal.
7. Most of the acute infectious diseases which I have observed show alkaline stools—p^H above 7.3.

CLINICAL MANIFESTATIONS IN CASES OF ALKALINE STOOLS OR ALKALINE COLONIC SECRETIONS

1. Many cases of obstinate constipation.
2. Arthritis.
3. Obesity.
4. Malnutrition.
5. Various endocrine imbalances.
6. Migraine and other headaches.
7. Kidney perversion.
8. Intestinal gas.
9. Cardiac disturbance, arrhythmia, tachycardia, etc.
10. Possibly a factor in many constitutional diseases.
11. Nearly all cases of cancer that I have observed.
12. Mental depression and other mental aberrations.
13. Anemias.
14. Hypotension or hypertension, or tension imbalance.

SUGGESTIONS FOR CORRECTION OF THE COLONIC pH IMBALANCE

1. All foci of infection must be eliminated—
   (a) Have blood counts.
   (b) Have blood sedimentation tests.
2. Diet regulation.
3. Correction of lesions involving the splanchnics.
4. Surgical correction of deformities.
5. Elimination of parasites.
6. Artificial maintenance of an acid stool over a period of time.
7. Artificial maintenance of culture media for acid-producing bacteria in the colon.

A SIMPLE COLONIC pH TECHNIC

1. To 20 c.c. of neutral distilled water add a loopful of the stool to be tested and agitate well until dissolved.
2. Arrange three test tubes and proceed as follows:
   (a) Into the first tube drop ½ c.c. of bromthymol blue.

(b) To this add 5 c.c. of the stool dilution.
(c) Match with color card. (If for any reason you are in doubt as to the correctness of the p^H ascertained, proceed with the other two tubes in the same manner, thus checking the first tube.)

PRESURGICAL TREATMENT

For years we have been taught to use soda, soap, and other alkaline materials in enemas to cleanse the lower bowel before and after the abdominal operations. Several years ago Dr. Daniels of Denver told me of the use of lactic acid, one per cent, as an enema; Dr. T. McAllister of Los Angeles told me of the use of lemon juice in enemas. For a number of years I have been using the whey from cottage cheese, thus supplying not only the lactic acid, but also lactose and the buffer salts contained in this whey.

As I understand it the saliva is normally alkaline because of the secretions of the salivary glands; the stomach juices are normally acid because of the secretions of the gastric glands; the small intestine is normally alkaline because of the secretions of the glands in its mucosa; the colon is normally acid because of the nature of the bacterial flora.

According to the best authorities the p^H of the colon should be from 6.7 to 6.9. If the colon once becomes putrefactive, the p^H will rise to above 7. We frequently find it as high as 7.5. In these circumstances the toxic materials from putrefaction are readily absorbed and throw an added burden upon the liver, endocrine glands, skin, kidneys, and lungs. With the p^H below 7 little absorption of putrefactive materials occurs by the colonic mucosa.

Patients prepared for abdominal surgery by the use of enemas containing one per cent lactic acid will be much better operative risks than those in whom the colon is allowed to remain alkaline. The colon will be relatively free from gas as will also the small intestine, thus giving the surgeon the advantage of a flat bowel.

What applies to the surgical problem also applies to general practice. If the stools are neutral or alkaline, alkaline enemas should not be administered. The use of lactic acid (1) increases the tone of the colonic mucosa; (2) reduces the absorption of putrefactive materials; (3) forms a medium in which lactic acid producing bacteria may grow; (4) reduces the reflex backache caused by distension of the colon.

1. Routine laboratory tests, including p^H of the stools, and where possible, p^H of colonic secretions.
2. If the p^H of the colonic secretions or stools is 7.0 or above, I prescribe the following:
   (a) Colonic flushings—water, quarts 1; lactic acid, drams 1; repeat until water returns clear.
   (b) Enema composed of concentrated sour milk whey-water, quarts 1; whey, ounces ½, to be retained a few minutes, if possible.
   (c) Repeat the above daily for two or three days if there is time before operation.
   (d) The concentration of acid in the enema depends to some extent upon colonic p^H and upon the quantity of residual feces.
3. Diet depends upon condition of patient and other laboratory findings.
4. If the stomach juices are hypo-acid, administer concentrated whey, drams 1 in water, ounces 4-6 before meals.

POSTOPERATIVE CARE OF THE COLON

1. Hypodermic-peristaltin, ampules 1, three times the first day.
2. Instil into rectum—olive oil, ounces 8; milk of asafetida, drams 1; lactic acid, drams ½.
3. Enema—water, quarts 1; lactic acid, drams 2 at 24 hours; repeat daily until patient expels gas without aid of tube or enema.
4. If more stimulating enemata are required, add sufficient lactic acid to enema formula to acidulate it.
5. When the patient is able to expel gas voluntarily, use enema—concentrated whey, ounces ½; water, quarts 1, daily for elimination.
6. Do not administer any alkaline enema to a patient having a p^H of 7.0 or above.
7. The patient may continue the use of acid enemas during convalescence. Laxatives should be used very sparingly. Many cases will need none at all.

Of course, technic must be varied as required. No fixed rule can be made as to frequency of administration nor concentration. If a milk and molasses enema is indicated, acidulate with lactic acid, drams 1. If the blood stream of the patient must be alkalinized per colon, use sodium citrate or lactate in acidulated water. Potassium citrate may be added if desired. Every physician must make his own observations and determine what is for him under the circumstances most practical; for instance, nearly all water supplies are alkaline; the degree of alkalinity varies; therefore the amount of acid required to make the water acid, that is, below a p^H 7.0 must vary. Distilled water becomes slightly acid if exposed to the air and should always be tested with bromthymol blue; it should test neutral, that is 7.0.

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Principles of Manipulative Treatment

The Low Back Problem

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IX

Foreword

This, the ninth article in the series upon The Low Back Problem as studied from the viewpoint of human mechanism in the erect attitude, concerns primary sacro-iliac maladjustment and for many reasons the writer approaches the subject with some hesitancy.

Probably no other single cause of low back pain has received as much attention as sacro-iliac dysfunction. Countless pages have been written by practitioners of both the allopathic and the osteopathic schools. Much of this has been relatively valueless because of the excessive number of dis-

Note: In the last previous article of this series, in THE JOURNAL for November, 1932, p. 91, under "E. The Use of Lifts," in lines 18-20, it should read, "All muscular structures upon the short extremity side will be put on tension."

agreements and contradictions, and this is especially true in the allopathic writings.

One has only to review the recorded ideas of present-day allopathic orthopedic authorities such as Goldthwait[1], Miltner & Lowendorf[2], Boorstein[3], Smith-Petersen[4] and Steindler[5], to appreciate the pathetic uncertainty that exists within their ranks today about most phases of the problem of sacro-iliac malfunction. The reader is urged to peruse these writings. This lack of progress, of course, is in a subject that was not original with the allopathic profession, and therefore their hesitation is only natural. They can hardly be expected to improve upon their incompetency unless the osteopathic concept is adopted by them, and this is unlikely.

F. G. Walcher[6] in 1889 and Gustav Klein[7] in 1891 were two of the early allopathic writers to record the possibility of movement in the sacro-iliac joint. Walcher found that the pelvic measurements (conjungata) could be changed by varying the position of the individual. Klein stated that "the elasticity of the bones is the minimal influence or force in this change of measurement. The change is chiefly brought about by means of a physiologic function of the sacro-iliac joints by rotation of the innominates about an arbitrary axis."

These men knew there was motion in those joints and yet it has been only in very recent years that the iliosacral articulation has been classed as a movable joint in standard anatomical texts. Such faltering progress is not to be feared, as is proved by the fact that osteopathic practitioners have been consistently and successfully normalizing these articulations both during the intervening years and before the dates given above.

The views of some of our own school have at times been greatly divergent from those commonly accepted by most members, upon certain phases of iliosacral mechanics, diagnosis and treatment.

It was not long ago that Platt[8] questioned the possibility of any motion in the sacro-iliac articulations. Likewise astounding, and to some disheartening, was the statement of Dain L. Tasker[9] (1929) that "it is not conceivable that anyone can hope to really diagnose pelvic lesions by palpation. It is a fact, however, that more than 95% of *so-called* sacro-iliac lesions have been declared to be such simply on the basis of palpation and mensuration." (Italics mine.) In his later articles, admirable for their descriptions and illustrations of practically all other pelvic and lumbar pathologies, this osteopathic writer did not offer a substitute for palpation in the diagnosis of sacro-iliac malfunction.

Contrasted with this attack upon the efficacy of palpation as a diagnostic method, it is refreshing to read the article by Carl P. McConnell[10] in the December, 1932, issue of THE JOURNAL. He states in part:

"To become skilled demands a high degree of palpatory training, ready coördination between brain and hand, mechanical ability, and a sense of proportional values. The palpatory reactions of the tissues and the minutiae of anatomical mechanisms should be distinctly sensed and their correlation ascertained. Months and years of daily training are required. This is the groundwork of technic skill and clinical judgment.

"Dr. Still's insistence on the early acquirement of the palpatory art is well founded. It not only comprises the groundwork of technic skill but the pathogenic, diagnostic and prognostic indices thereby obtained are beyond compute. The trained sense of touch should be utilized in the entire gamut of etiologic interpretation and therapeutic application. Early and persistent instruction in clinical palpation develops the faculty of always viewing, analyzing and correlating the various subjects. The feel of the tissues discloses the condition of the body in physiological reaction and structural make-up, presenting an entirely new world of facts [condensed]."

Many of the foremost osteopathic investigators, as well as countless allopathic writers[11], have asserted that the use of the x-ray is valueless in determining the precise condition of the sacro-iliac articulations. At times roentgenology will aid in diagnosis, but as a routine method it is not efficient. As the writer said in this JOURNAL (Feb., 1932, p. 219): "The standing method of plating does not supplant osteopathic palpation methods for the diagnosis of sacro-iliac and lumbar maladjustment."

This review shows why the writer has questioned his ability or authority to discuss sacro-iliac maladjustment in this series. Furthermore, space is hardly available adequately to cover all phases of the present knowledge of the sacro-iliac question even if that would be in place in this series. Yet many illuminating insights and much valuable information has come to the writer from the observations and x-ray visualizations conducted in connection with this series upon erect human structure.

The answers to many of the contradictions referred to in preceding paragraphs are known. Palpation methods can be outlined by which practically any osteopathic student can demonstrate the amount, extent and readiness of sacro-iliac mobility, without involved or laborious training. The earlier discussions in this series enable one to rule out those conditions that most often confuse the examiner in sacro-iliac diagnosis. These were Short Extremity, Locomotive Error and Psoas Fibrositis. Likewise a common adequate understanding of the sacro-iliac conditions between reader and writer is a necessary requirement before the work to follow, upon the lumbar and upper spinal regions is undertaken.

Our profession is noted for its superior knowledge about the sacro-iliac problem. Our strategic position is maintained by the everyday performance of our members. Yet we should not close our eyes to any new knowledge that will in any way help us to improve our position. If our customary method of analysis of sacro-iliac anatomy, physiology, pathology or diagnosis is challenged by apparently new facts, which close analysis shows are not so new, but which confirm and broaden our ideas upon the subject, then we should study carefully and try to apply these principles.

Not all phases of the sacro-iliac problem will be discussed here. Much has already appeared in our literature and some of this will be referred to.

PRIMARY SACRO-ILIAC MALADJUSTMENT

This title necessitates an explanation and common understanding. Its wording contains the first reasons for much misunderstanding upon the sacro-iliac problem.

The word maladjustment, in the minds of many, signifies only a change of location. Anatomical malposition is perhaps the first thought. It is necessary here to emphasize that maladjustment of function is a possibility. In sacro-iliac nomenclature the expressions subluxation, strain, sprain and relaxation are encountered. Often only one of these conditions is visualized by the thinker. They are all maladjustment possibilities in the average freely movable articular iliosacral structure and are all found as pathological changes at one time or another in the iliosacral joints. Subluxation, in which condition, as commonly accepted, there is some slight malalignment of the articular elements, is common to osteopathic knowledge and is even admitted by many orthopedic authorities.[12] Sacro-iliac strain or sprain is perhaps somewhat less understood, but is also frequently encountered. It can best be visualized as the inflammatory pathology resident in the structures of and adjacent to the sacro-iliac joint resulting from a sudden or persistent mechanical irritation. The pathological conditions present are at times acute in their tissue change characteristics. More frequently they are found as fibrositis, ligamentous thickening and adhesion formation within and around the sacro-iliac articulations. These acute or chronic changes occur most frequently in the posterior sacro-iliac ligaments, namely, the interosseous sacro-iliac ligament and the long and short posterior sacro-iliac ligaments. Occasionally in chronic sacro-iliac stress conditions the fibrositis extends into the fibers of the gluteus medius muscle in whole or in part, where it is easily palpated, and serves as a valuable diagnostic aid in the determination of the exact type of sacro-iliac stress that has been imposed upon the articulation. It can be seen readily that this type of pathology will alter the normal movements of the sacro-iliac joint in extent, direction or degree. There may also be concurrently a malalignment of the osseous units, but not necessarily so.

The last named term often encountered in sacro-iliac terminology is sacro-iliac relaxation. Contrasting with the two above described conditions, this one of relaxation is not so frequently encountered. The only true tests for its presence are expert palpation or fortunate roentgenologic visualization. It does occur from severe traumatism, paralysis and pregnancy at times, but too often this classification serves as a convenient mistaken diagnostic excuse for inability to correct sacro-iliac mechanisms that persist in giving symptoms.

Not all sacro-iliac joints that give symptoms are subluxated. Errors of motion, such as are produced by acute inflammation of the articulation with immobility and great pain, are also classed as sacro-iliac maladjustments. True malalignment may not be present but maladjusted physiology surely is.

After all, one of the chief functions of an articulation is movement. When this movement is impossible some symptoms usually result. It matters little whether the immobility in the articulation is caused by displacement or adhesions or acute inflammation. Appropriate treatment should be directed toward restoring physiology. In correcting malalignment in an articular structure, whether this malalignment be in the foot, in an intervertebral articulation or in the sacro-iliac joint, the end result is usually better mobility.

This line of thought has not always been applied to sacro-iliac dysfunction. Often only subluxation is envisioned. The writer referred in a previous article to the fact that a painful sacro-iliac joint is often the one opposite to the one needing treatment, the painful articulation being the overworked one, due to immobility in its fellow. In such a case (and this state is not rare), the articulation showing little or no subjective symptoms requires help in the way of restored normal mobility that it may take up its share of movement in the pelvic ring. The writer recently consulted upon such a case where three earlier physicians had each applied manipulative treatment to the hypermobile, symptom-producing articulation. One technical procedure applied to the symptomless but physiologically maladjusted iliosacral articulation served to give complete and permanent relief. Truly the physiologic movement efficiency of an articulation is a measure of its value. Function performed makes, and when omitted unmakes, structure. Maladjustments of sacro-iliac mobility are important.

Thus we have outlined the meanings to be attached to the terms in the paper to follow. The exact meaning of each should be carefully noted in order to avoid future confusion. The conditions described occur in the iliosacral structure at various times and, when one is present, it requires definite treatment procedure. This statement also brings us to the first word in the title, the word primary.

Much confusion has existed in analyzing defects in, and outlining effective treatment for, sacro-iliac structure, because so many have not differentiated between the primary affections of the joint and those of a compensatory nature. This is the second point the writer desires to emphasize as having been of major importance in causing the contradictions that occur in sacro-iliac discussions.

Obviously, iliosacral pathology that is primary in nature can be treated successfully only by remedial measures directed specifically and directly toward the removal of this pathology. Fundamental principles are operative here that differ entirely from those useful when pathological change results in the sacro-iliac mechanism in compensation to some other structural change, such as short lower extremity for example. In this latter case, only the correction of the shortness in the extremity, which is the constant maladjusting force acting upon the pelvic mechanism, will permit normalization of the sacro-iliac structure.

It was for this very important reason, among others, that before any sacro-iliac examination has been described in this series, the methods of identifying the three named primary conditions as present or of eliminating them from the diagnostic picture entirely, were discussed. When short lower extremity, an error of locomotion or a primary psoas fibrositis, are definitely eliminated from the diagnostic possibilities in a given patient before the examination for primary sacro-iliac maladjustment is instituted, that in itself makes the sacro-iliac problem much simpler.

The writer detailed at some length, in the March issue of THE JOURNAL, the mechanism of the maintenance of balance in the upright human mechanism. Lateral shifting of the trunk, as well as its movement in the anteroposterior direction, was de-

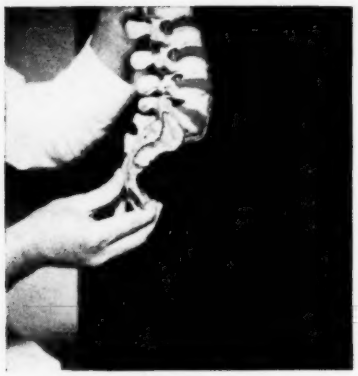

FIGURE 1

FIGURE 2

FIGURE 3

1. The auricular surface of the sacrum outlined in black. Note its L shape, the two limbs and the position of the apex in the standing position.
2. The index finger is palpating the groove located in the upper limb of the auricular surface of the sacrum.
3. The fourth finger is palpating the groove located in the lower limb of the auricular surface of the sacrum.

scribed. The fact that equilibrium requires weight shifting in every degree of the compass, that is, that it is a 360 degree process, was brought out. Finally, upon this basis of equilibrium, the twisting or torsional movements of the trunk on the pelvis, and the shifting of the entire body upon the lower extremities were outlined. Any reader who visualized all of these adjustments of balance in the living patient will have little difficulty in sensing the work being done in the sacro-iliac articulations. He will readily see why strain can occur here and that such strain could be classified as to its major direction and extent of force.

METHODS OF STUDY

ANATOMICAL CONSIDERATIONS

"What is osteopathy? It is anatomy first, last and all the time," said A. T. Still.

It is essential before physiological and pathological processes in the structures in question are described, that the reader be well acquainted with the details of their anatomy. This means not only that he be familiar with the usual textbook description of the sacro-iliac mechanism, but also that various and perhaps less known anatomical and mechanical facts are made a part of his visualization. He must mentally see, and accurately so, these articulations and their relationships not only in the sitting patient, as is common, but also when the patient is recumbent upon the back. Even *more important* than these must be his visualization of the exact sacro-iliac relationships when the subject is prone upon the *face or abdomen, when lying upon the side and when standing upright.*

This point may seem to be unduly stressed, but it is surprising to know how easy it is to have an inaccurate or incomplete conception of the anatomy of this articulation. The auricular surface of the sacro-iliac diarthrosis is roughly L-shaped. See figure 1. If one can visualize exactly in just what direction the sharp or apex part of this L-shaped surface is pointing, with the patient in each of the positions named, then this phase of the study will be unnecessary.

If he can not instantly mentally see these relationships in the various positions of body posture, some study, preferably with the skeleton, will be necessary. It will be seen later in the diagnosis of sacro-iliac mobility that in the most easily mastered method, the patient is lying upon the examining table face down. It is imperative to have a true mental picture of every detail of these articulations. The direction of the apex of the auricular surface, the exact position of the upper and lower limbs and their particular relationships to the posterior superior and inferior spines of the ilium must be accurately pictured.

It is extremely easy to acquire and retain a false mental picture of anatomy. Such defective visualization will not even be known to the possessor. One will think he really knows the exact relationships of a given structure, and yet upon appropriate checking he will be surprised to learn how far wrong his mental image was. This is especially true of the complicated sacro-iliac articulations and the only safe remedy is to observe carefully, time and again, in various positions, just how these joints are constructed by studying an osseous example.

Another feature of the construction of the auricular surface of the sacrum, is found in the distinct depressions which can be felt by the finger, running parallel to the long axis of each limb. The edges upon either side of this long furrow are somewhat raised. See figures 2 and 3. These furrows are found on most sacra but occasionally will be absent. If one particular specimen does not illustrate this point, it would be well to examine several others that do. This feature often determines the precise positions of malalignment between the sacrum and ilium and this point will be considered at length later in this paper.

It must be remembered that the sacrum in one part of its auricular surface is usually wider above than it is below. The visualization of its construction in those parts where the sacrum is wider below and in front, namely, the first sacral segment, when in the anatomical position, is usually easier. The fact that in one part it is a true wedge, as well as the fact that in another part it is an inverted one, in the upright position, is less well known and aids one in obtaining a true picture of

its status as a part of the pelvic ring. The part of the sacrum that is wider above than below when in the anatomical position is located in the posterior half of the horizontal limb. An understanding of all of these facts of anatomy is very necessary to one doing sacro-iliac work. Unless we can effectively normalize the pelvic ring and lower appendicular structures, our efforts in the correction of the superior elements are only temporary and difficult. Thorough understanding of the sacro-iliac problem can serve as the instrumentality to improve general technical ability and is therefore worth the effort.

PHYSIOLOGICAL CONSIDERATIONS

The exact physiology of the sacro-iliac joints is still unknown, although rapid strides are constantly being made in this study. The writer said, in the May, 1932, issue of THE JOURNAL (p. 353):

"The movements of the constituent parts of the human pelvis, as well as of the pelvis as a whole, in locomotion have been little studied and even less understood. This is another reason for the uncertainty that exists about the sacro-iliac lesion. Until such study is done scientifically, our knowledge of the exact physics involved in sacro-iliac and lumbar etiology will remain somewhat empirical."

Some advances have been made in investigating the physiological movements in the pelvic ring, and these will now be outlined. The movements in the iliosacral articulations must occur in definite directions. They must have limitations of extent and there must exist some criterion of ease or readiness of movement. If these qualifications of sacro-iliac mobility are known to the examiner, then he is in a position to detect by palpation when these physiological attributes are in error. In this way definite treatment can be outlined.

In the previous articles the writer has constantly referred to the adverse influence exerted upon the sacrum as a constituent part of the pelvic ring by the respective forces being discussed. This was done deliberately to emphasize the importance of the participation of the sacrum in the maintenance of the erect position, and the force exerted upon the sacro-iliac articulations by the various movements or stresses in various directions that are existent in the upright work process. To quote from the March issue of THE JOURNAL:

"The twisting tendency necessary to face forward in cases of appreciable lumbar immobilization . . . *imposes much strain upon sacro-iliac structures.* The tendency is constantly to twist sacrum between innominates. . . . This mechanical principle is frequently causative, in cases of innominate lesions that recur. . . . Compensatory bilateral sacro-iliac maladjustment frequently takes place by movements of each innominate in opposite directions as related to sacrum."

It is important that the movements of the sacrum between the innominates be clearly visualized. By visualizing the patient in the standing position one can easily perceive that all of his trunk and upper weight is supported entirely by the two iliosacral joints. The study of x-ray plates with the patient standing amplifies one's understanding upon this point. With this mental picture established and an appreciation of the weight being carried through the agency of the sacro-iliac articulations, it should be but a step to see mentally the sacral movement between the innominates, such as takes place in jumping or running. In the erect attitude in violent exercise there is added to the weight already being supported by the sacro-iliac structures, other exaggerated stresses. These are at times sufficient to tax or strain the restraining ligaments of the iliosacral joints severely. When this occurs in the position above described, the sacrum moves between the innominates.

As early as 1906 a well-known osteopathic writer, M. E. Clark,[13] when describing lesions of the sacro-iliac articulation stated: "The lesions of the sacro-iliac articulation will be considered from two points of view: (1) those resulting from subluxations of the innominate bone; and (2) those from subluxations of the sacrum" (p. 305). When describing the latter he recognized that the sacrum had possible movement between the innominates and that it was subject to displacement in various directions. These slight displacements upon the innominates occurring in the sacro-iliac articulation he properly called sacro-iliac maladjustments.

More recent investigation of the question of the movements of the sacrum between the innominates than that of Dr. Clark has been recorded by the Department of Anatomy of the Chicago College of Osteopathy.[14] This department said (1930):

"The following statements concerning the changing relationships of innominates upon sacrum in normal pelves are based upon laboratory, x-ray, and clinical findings . . . the varied applications of forces by which weight and force are transmitted from the vertebral column through the pelvis to the femora bring about a shifting of the sacrum between the innominates. This shifting or changing relationship resembles a twisting in that the pubis is carried laterally from the mid-line of the sacrum. *In fact, the sacrum is the structure which moves in relationship to pubes.* This twisting, or shifting, is associated with anterior and posterior movements of the iliac crests, or again, the sacrum is moved in relation to the iliac crests." (Italics mine.)

It is interesting to note that this more recent investigation of the movements of the sacrum between the two halves of the pelvic ring confirms the earlier findings of Dr. Clark. This excellent pioneer in osteopathic investigation stated further[15] in his consideration of sacral movement that:

"The lesions of the sacrum come from causes that ordinarily produce innominate lesions and in addition, lumbar disturbances such as curvature; *Falls in the standing posture,* the superimposed weight of the body driving the sacrum downward; and direct injury or certain occupations that necessitate the patient's sitting bent over a desk or working in a stooped posture. *The effects upon the sacro-iliac joint are the same as an innominate lesion.* The effects on the sacrolumbar articulation are practically the same as those from a lesion of the fifth lumbar vertebra" (p. 328). (Italics mine.)

It will probably be surprising to many that these statements appeared nearly thirty years ago. Unfortunately their more universal application has not come about.

These quotations are given to show that sacro-iliac maladjustment can occur in two ways. These two methods of the production of sacro-iliac pathology are respectively, as previously recorded by Dr. Clark, those in which the ilium moves in relation to the sacrum, and those in which the sacrum is the movable element in relation to the innominate. This movement of one or the other element, let it be understood, can be the cause of subluxation or malalignment of one to the other, or can be the first traumatic cause of an inflammatory reaction with immediate or later lessened mobility with or without malalignment, i. e. either a maladjustment of anatomical position or only a maladjustment of mobile physiology.

The findings in the patients presenting in the 540 cases that were examined by x-ray in the standing position and examined carefully following the methods previously outlined, have served to confirm these earlier investigations upon sacro-iliac physiology. Several distinct movements exist physiologically in the sacro-iliac joints.

Flexion and extension of the sacrum between the innominates is a normal movement. This fact has been known since the work of Walcher and of Klein previously referred to. Pathological exaggerations of this normal movement are frequently encountered in clinical examination and are shown as sacral subluxations in either the hyperextended or hyperflexed position of this bone in relation to the two innominates.

(Continued in next article.)

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The Relation of Maternity to Pediatrics*

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Certain maternal and paternal diseases affect the child directly through the blood stream, syphilis and the acute infections and fulminating toxemias being the most outstanding examples. Tuberculosis is prone to give rise to a tubercular diathesis with subsequent danger of infection through contact. Maternal gonorrhea endangers the child during its passage through the birth canal. Maternal or paternal drunkeness may affect the child both physically and mentally.

Certain physical and mental characteristics are transmitted to the child without regard to the status of the mother during or immediately before pregnancy —characteristics which are deep-seated and reach far back into her previous life and her own heredity. Possibly these may be modified by careful prenatal care.

There has been no doubt as to the absolute imperativeness of the necessity for treatment of actual disease of the pregnant woman from the standpoint of its effect upon the child, but it is only during the past few years that marked attention has been given to prenatal care with reference to what are commonly considered the minor prenatal relationships between mother and child. These are really relationships of wider scope and greater importance in that they affect 100% of mothers and children in contrast to the relatively small percentage in which actual disease is a factor.

The obstetrician, and later the pediatrician, has a definite, well established method of procedure in combating syphilis, tuberculosis, gonorrhea, toxemia and other infections, but it is only recently that definite efforts have been made in prenatal care as related to its effects upon the size or vitality of the child, the manner of its birth and its early care.

Dr. Effa V. Davis of Chicago—head of one of Chicago's small but well conducted maternity hospitals—over a period of years gathered statistics as to the effect of prenatal care on the size and health of the new born. She believes that no matter how surgically wise the obstetrician may be, or how well versed in the mechanics of labor, if he be not willing to study obstetrics from the child welfare aspect he does not qualify as a first class specialist in the field of obstetrics. She published her first survey in 1905 after observing the direct effect of diet and exercise on patients in her maternity home where they often came to reside for two or more months before delivery. She says that at that time 56% of her patients gave birth to infants weighing over 8 pounds, and only 28% were under 7½ pounds. Most of the complications such as lacerations, instrumental intervention, toxemias and postpartum hemorrhages, occurred in patients with oversized babies, as did also still births, cerebral hemorrhage and paralysis in infants. The more active patients with controlled diet had shorter, easier labors and babies of moderate

*Read before the Pediatrics Section, A. O. A. Session, Detroit, 1932.

weight, from one to two pounds less heavy, with a smaller percentage of birth complications. She then established a system of routine prenatal care in which she regulated the *relation* of *diet* to *physical activity*. The advice to eat less and exercise more, which was received with doubt 20 years ago, became popular when it was determined that the pregnant woman by such means was able to control the size of her child to a degree to make childbirth less difficult and fraught with less risk of complications and injuries both to herself and her babe.

In 1917 after a trial of thus balancing the amount of food with exercise, a second survey showed that only 35% bore overweight infants, a little less than 10% weighing 9 pounds, or more. In 1927, ten years later, when the prevalent desire for slim figures had helped to make her advice more acceptable to mothers, a third survey disclosed still better results. Less than 20% bore infants weighing 8 or more pounds, while the remaining slightly more than 80% bore infants weighing from 6 to 7¾ pounds. Less than 4% weighed more than 9 pounds and none reached the 10 pound mark.

The instrumental deliveries, the second degree lacerations and the one postpartum hemorrhage in this series practically all occurred in the cases in which there were oversized babies. Large babies are more subject to the danger of intracranial pressure and injuries from operative deliveries. Also, the injury to maternal structures in the birth of one or several 9 and 10 pound children may result in later fetal malpositions due to resultant flabby and relaxed abdominal walls and uterine structures. Toxemias also are more prevalent in mothers with over-indulgence in food and insufficient exercise. Eclampsia was (relatively) infrequent in Germany during the period of the World War, due to scarcity of food, and its occurrence is much less everywhere now as the result of the regulation of diet as a part of prenatal care.

A simple, well balanced diet of three meals a day, combined with physical activity during 6 or 8 hours of the 24, with plenty of water to promote kidney elimination, with free bowel evacuations, avoidance of exposure to infections, and observance of a normal mental attitude, form the greatest contributions we can offer to child welfare. Dr. Davis summarizes the results of her research as follows:

"1. Complications in labor to mother and child are in almost direct proportion to overgrowth of the fetus.

"2. Control of fetal size can be accomplished by regulating the quantity and quality of the mother's food, together with her activity, particularly in the last three months.

"3. The welfare of the child is conserved both at birth and later by saving the mother the injuries which she suffers from carrying and delivering an oversized baby.

"4. The education of mothers on balanced food rations, together with regular habits of eating, working and resting, builds not only for safety in pregnancy but for wholesome family life after they pass from the obstetrics service, and a lesson has been learned for future pregnancies."

Her statistics are similar to these compiled at Johns Hopkins Hospital and other places where like investigations have been made.

"At about this time Dr. Riggs reported a study of 1,000 deliveries at Johns Hopkins Hospital, in which he states that those women waiting in the hospital some weeks before delivery gave birth to larger infants than those remaining at home where they were presumably more active, doing their household duties until they entered into labor, and possibly having less food than they obtained at the hospital. In 1898 Pinard and Bachimont from a study of 4,445 cases in the Baudelocque Clinic, found that the infants born of women in residence in the hospital for three months prior to confinement averaged 500 gm. heavier than those born to mothers who had entered just before or during labor. They considered this due to more nourishment and less activity."

The beneficial effects of sunlight or ultraviolet therapy, viosterol, and osteopathic circulatory and corrective treatment are factors in producing children with rugged constitutions. It would greatly lighten the duties and anxieties of the pediatrician if every child could be born with these contributions toward his welfare, as well as lessen vastly the waste of infant life and the drain upon private and public resources in the care of physically and mentally abnormal children.

It is a homely subject I am presenting to you, but if put into universal effect, its results would be spectacular past comprehension.

The relation of maternity and pediatrics does not cease when the child is born. The proper care and supervision of her child's food, rest, clothing and general habits is the next important function of motherhood. Without the full coöperation of the mother the advice of the pediatrician is of small value. Physicians should carefully study and educate mothers in this regard. Every pediatrician knows that many of the child's problems are parental ones. Especially is this true in the field of psychology. Children are very sensitive to suggestion and environment. "The child patterns his human objective after one or both parents. Dr. W. Stekel of Vienna states that the great majority of neurotic children are born of neurotic parents and conversely the better balanced the parent the less possibility of a future neurosis in the child."

The mother of a neurotic child must be taught something of the physiology of child behavior. G. E. Seham* in *Archives of Pediatrics* says: "In human behavior the factors are sufficiently controllable, provided the *physiology of behavior* is taken into consideration. In attempting to explain the behavior of any organism, whether it be amoeba or man, it is not sufficient merely to describe and measure external stimuli and their responses. An account must also be taken of the *internal* stimulating conditions which control the animal's physiological state. It makes a great difference whether we subject to stimulation a well fed animal or a hungry one; a well rested animal or a tired one. The present research has clearly brought out that in a state of hunger and fatigue the reactions of the child to stimuli become unpredictable, while with hunger and fatigue eliminated they become uniform and constant to one and the same stimulus.

*Seham, Grete E.: The Diagnosis and Treatment of Behavior Disturbances in the Home, *Arch. Ped.* 59: 354-382 (June) 1932.

The first step in the prevention or treatment of behavior disturbances is, therefore, the establishment of an adequate physiological state. By adequate physiological state, as the phrase is used in this paper, is meant the functioning of the body at its optimum. It refers to proper sleep, rest, food, exercise and the functioning of the organs. Once the physiological state is made adequate, the child becomes a reasonable organism, reacts favorably to word stimuli, and falls in line with the motives of desirable child behavior."

He gives a series of case reports in which he shows that behavior disturbances of neurotic children are frequently due to (1) insufficient or improperly prepared food, including incorrect time of eating; (2) insufficient sleep and rest as well as to (3) improper psychological handling.

He says if mothers were skilled in establishing and maintaining an adequate state of well-being in the child, which is dependent upon physiological factors, they might find that the psychological handling of the child is not difficult because a child in an optimum physical state is in a receptive mood to take suggestions.

He gives a number of case reports in which he begins the treatment of a behavior problem child by showing the mother how to cook the food, how to serve it, how to make most favorable every factor that will make for good eating. This is accompanied by an investigation into the conditions in which the child sleeps and rests and if found incorrect, he provides personal supervision.

"It is possible . . . . that many conduct disorders are directly influenced if not caused by disturbed physiological states, due to *insufficient sleep, rest, exercise and hunger.*" (Italics ours.)

Therefore the first treatment of a behavior disturbance must be to bring about the establishment and maintenance of an optimal physiological state. In the presence of an adequate physiological state the psychological reations of the child become constant and predictable to one and the same stimulus. Good heredity, attention to prenatal care on the part of the mother, and the giving of normal care and environment to the child after birth are necessary factors in the successful relation of the pediatrician to the child under his care.

The pediatrician in turn should be able and willing to guide and educate the mother in the intelligent care of her child both when well and during the minor disturbances of childhood. He should not dose the child. He should advise proper food, elimination, rest and activity, fresh air and wholesome interests. He should keep the body structures in proper relation to each other, restore normal circulation where it has been impaired, use antiseptics when needed for bathing infected areas, promote drainage of infected or congested tissues, and otherwise conform to the physiological processes which nature herself has established.

37TH ANNUAL CONVENTION, HOTEL SCHROEDER, MILWAUKEE, 1933

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CHICKENS ROOST AT HOME

The American Medical Association has had one of its chickens come home to roost. Bad pennies often turn up. Sometimes the bread once cast upon the waters returns, but sometimes, too, the butter with which we expect it to be spread is rancid.

It isn't particularly polite to say "we told you so," but there is a poor sort of satisfaction in saying that various officials of the American Osteopathic Association have been saying, frequently and vehemently for many years, that the American Medical Association's political coterie was heading the general practitioner of that school of medicine straight to oblivion.

Late in November the Committee on the Costs of Medical Care completed its investigation, over a period of five years, and supplemented its previous partial reports with recommendations.

Dr. Ray Lyman Wilbur, Secretary of the Interior in President Herbert Hoover's cabinet, was the chairman and frontispiece for this committee, thus appearing to give United States Government sanction to its activities. The committee had no other government connection.

The University of Chicago Press published part of the proceedings and reports of this committee. After years of labor, by committeemen whose obvious bias has been frequently criticised, the recommendations of the committee are as follows:

> I. The Committee recommends that medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organized, perferably around a hospital, for rendering complete home, office, and hospital care. The form of organization should encourage the maintenance of high standards and the development or preservation of a personal relation between patient and physician.
>
> II. The Committee recommends the extension of all basic public health services—whether provided by governmental or non-governmental agencies—so that they will be available to the entire population according to its needs. Primarily this extension requires increased financial support for official health departments and full-time trained health officers and members of their staffs whose tenure is dependent only upon professional and administrative competence.
>
> III. The Committee recommends that the costs of medical care be placed on a group payment basis, through the use of insurance, through the use of taxation, or through the use of both these methods. This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits, i.e., compensation for wage-loss due to illness, if and when provided, should be separate and distinct from medical services.
>
> IV. The Committee recommends that the study, evaluation, and coördination of medical service be considered important functions for every state and local community, that agencies be formed to exercise these functions, and that the coördination of rural with urban services receive special attention.
>
> V. The Committee makes the following recommendations in the field of professional education: (a) That the training of physicians give increasing emphasis to the teaching of health and the prevention of disease; that more effective efforts be made to provide trained health officers; that the social aspects of medical practice be given greater attention; that specialties be restricted to those specially qualified; and that postgraduate educational opportunities be increased; (b) that dental students be given a broader educational background; (c) that pharmaceutical education place more stress on the pharmacist's responsibilities and opportunities for public service; (d) that nursing education be thoroughly remolded to provide well-educated and well-qualified registered nurses; (e) that less thoroughly trained but competent nursing aides and attendants for nurse-midwives be provided; (f) that adequate training for nurse-midwives be provided; and (g) that opportunities be offered for the systematic training of hospital and clinic administrators.

It is apparent that recommendation number one is our old friend, "group medicine" tied to a hospital. Recommendation number two is obviously state medicine on an increased scale (the American Medical Association's politically-minded leaders have for years overplayed their hands in this direction). Recommendation number three suggests quite vaguely insurance medicine plus further extension of state medicine. Recommendation number four invites lay study and supervision of the set-up necessary to carry out the provisions recommended previously. The fifth recommendation is a hodge-podge of advice upon medical education.

We quote next the recommendations of the minority reports submitted and signed by nine dissenting members of the committee:

> (1) That government competition in the practice of medicine be discontinued and that its activities be restricted entirely to certain types of service; (2) that government care of the indigent be expanded with the ultimate object of relieving the medical profession of this burden; (3) that coördination of medical service be considered an important function for local communities; (4) that united attempts be made to restore the general practitioner to the central place in medical practices; (5) that the corporate (i.e. organized) practice of medicine be vigorously and persistently opposed as wasteful, inimical to high quality, or productive of unfair exploitation of the medical profession; (6) that careful trial be given methods which can rightly be fitted into our present institutions and agencies without interfering with the fundamentals of medical practice; and (7) that state or county medical societies develop plans for medical care.

The summary in which the whole committee sums up its own work critical of the present system sets forth nine outstanding deficiencies based upon the committee's 26 studies. They follow:

> 1. The people need a substantially larger volume of scientific medical service than they now utilize. This is particularly true of persons of small incomes. In

spite of the large volume of free work done by hospitals, health departments, and individual practitioners, and in spite of the sliding scale of charges, it appears that each year nearly one-half of the individuals in the lowest income group receive no professional medical or dental attention of any kind, curative or preventive.

2. Modern public health services need to be extended to a far greater percentage of the people, particularly in rural areas, towns, and small cities.

3. There is need for a geographical distribution of practitioners and agencies which more closely approximates the medical requirements of the people.

4. Current expenditures for medical care, in rural and semirural areas, are insufficient to insure even approximately adequate service, to support necessary facilities, or to provide satisfactory remuneration to the practitioners.

5. Many practitioners, particularly well-trained recent graduates, should have opportunities to earn larger net incomes than they now receive. Incomes of general practitioners and of specialists should be more nearly equal than at present. The opportunity and incentive for "fee-splitting" should be removed.

6. Better control over the quality of medical service is needed, and opportunities should be provided for improving quality as rapidly in the future as it has been improved in the past. Improvement of the quality of service would include: Elimination of practice by unqualified "cult" practitioners; control over practice of secondary practitioners (like midwives, chiropodists, and optometrists); restriction of practice of specialties to those with special training and ability; more opportunity for postgraduate study for physicians, particularly rural practitioners; more opportunity for physicians to exchange experiences and to assist each other; better control, through supervision and further education, over the work of certain physicians and dentists who even though regularly licensed are not competent for many functions.

7. There should be more effective control over the number and type of practitioners trained, and their training should be adjusted to prepare them to serve the "true" needs of the people.

8. There is a need for reduction of waste in many directions, such as the money spent on unnecessary medication, on services of poorly qualified or utterly unqualified "cultists," and wastes due to idle time of practitioners, high "overhead" of private medical and dental practice, unused hospital accommodations, and the sending of patients from place to place for medical service.

9. There is need for some plan whereby the unequal and sometimes crushing burden of medical expenses can be distributed. The prevailing methods of purchasing medical care lead to unwise and undirected expenditures, to unequal and unpredictable financial burdens for the individual and the family, to neglect of health and of illness, to inadequate expenditures for medical care, and often to inequable remuneration of practitioners.

If this report is any indication of the trend of modern thinking we wonder what the result is to be.

Certain very definite indications for action upon the part of the osteopathic profession are apparent. We can, if we like, join with old-school medicine to oppose the advance of state medicine, insurance medicine, and the like. We may be successful and thus protect that large proportion of the public which entrusts its health to our general practitioners and specialists.

Or we may agree that the policies recommended by the committee in question are correct, or at any rate are likely to prevail. If we do, it is apparent to every leader in the profession that organized osteopathy must prepare for a real legislative fight when the legislation providing for carrying out this program comes up for consideration. We have as a profession cut our eye teeth on the legislative teething ring. We know how to carry on and we know that only organization, carrying out the definitely expressed will of the profession, can successfully operate in such a situation.

Let us decide which course we shall pursue,—decide now in the next six months, before the next July meeting of the House of Delegates and then set to work to perfect our organizations of state and national associations, as we know how to perfect them.

We shall have need of the coöperation of every practitioner. Nothing less will be sufficient to place osteopathy in a position where it can render the best service. Indeed we are probably facing the problem of insuring the perpetuity of the profession. It is not a problem for 1935 or 1936. It is a problem for 1933 which should have been settled in 1932.

R. C. Mc.

ANOTHER MILLION FOR STATE MEDICINE

It seems possible that the present Congress, even before its dissolution, may consider some other legislation than that touching foreign debts, treasury deficit, and the eighteenth amendment. Perhaps we should have reversed the order of the listing.

A bill to carry forward what was begun under the so-called Shepard-Towner act, though in a somewhat modified form, has been introduced. In its present amended form it is designated in the Senate as S. 572, as reported by Mr. Jones, with an amendment March 14, 1932. In the House of Representatives, H. R. 7525 has not received the amendment reported to the Senate. It is entitled, "A bill to provide that the United States shall cooperate with the states in promoting the general health of the rural population of the United States and the welfare and hygiene of mothers and children."

The bill would appropriate $500,000 for the fiscal year ending June 1, 1933, and thereafter $1,000,000 a year to enable "the state agencies of health in coöperation with the Children's Bureau of the Department of Labor to promote the health and welfare of mothers and infants." Each participating state is to receive $15,000 and the balance of the fund is to be distributed on the basis of the population of the various states. The bill provides that each state which becomes a participant in this plan of action must make available from its own resources a sum equal to that appropriated to its use from the United States Treasury.

A Board of Maternity and Infant Hygiene consisting of the Chief of the Children's Bureau, the Surgeon General and the United States Commissioner of Education is set up to direct the Children's Bureau in administering the fund.

A maximum of $50,000 per annum is set up for the expenses of administration.

The makers of the bill recognize the attendant danger in its administration in that "they expressly forbid entry to the home of a child over the objection of a parent or guardian and forbid dictation to a parent as to methods of treatment of a child."

All plans of states for expending this fund must meet the approval of the aforementioned board. This provision of course places the actual expenditure of the funds entirely out of state control and under United States government control.

This whole scheme is merely another extension of state medicine. It is worse, if that is possible, since it is so thoroughly headed up in and controlled by another government bureau. The administration alone is calculated to cost the Government 50,000 unnecessary dollars yearly. In these days of difficulty in obtaining budget-balancing, an opportunity is afforded Congress here to "lop off" at one stroke $1,000,000 of absolutely unnecessary expenditure.

Paternalism upon the part of the Government could go farther into establishment of state medicine. When it does it will so far destroy the field of activity for the present worker in the healing arts as to make the service rendered the public of a distinctly inferior nature. Today the high standard of proficiency in the profession is held up not only, and not so much, by legal requirement as it is by competitive necessity. Sooner or later under the present system, the rewards of intelligent practice go to the best physician. There are a few exceptions of course.

But with every advance to government medicine the necessities of competition are lessened, the sharp edge of responsibility of physician to patient is dulled. It is not conducive to the best of effort for the physician to owe his responsibility to the state rather than to the patient. Every doctor of experience knows it.

There is another angle. In government medicine the patient, lacking confidence in an unknown government-officer-physician, withholds the confidence and coöperation so necessary to an adequate physician-patient relationship.

The health department of the City of Detroit recognized this principle. Under city health officers it was able to show a very small percentage of its child population vaccinated against smallpox and "immunized" against diphtheria. The city changed to a system whereby private physicians were remunerated by the city for vaccinating their own patients or administering toxoid or toxin-antitoxin. Immediately the percentage of children listed as protected increased, almost doubling in a short time. This is an obvious illustration of the part played by patient-physician confidence.

State medicine is wrong in principle and it is weak in practice but along with other social changes it grows by leaps and bounds. The bill in question is just another thin wedge, if a million dollars a year can be called "thin" in this day and age.

R. C. Mc.

MODERN MEDICAL EDUCATION

We are indebted to the final report of the Commission on Medical Education under the chairmanship of A. Lawrence Lowell, president of Harvard University, for the following list of defects in medical training of today. We catalog the list as we extract it.

1. Instruction in too many subjects in too great detail.
2. Dependence on sheer memory, instead of development of reasoning power.
3. Topics often presented from the standpoint of too much technical detail.
4. Too much emphasis on laboratory work, and on routine experiments therein.
5. Clinical instruction often focused on rare and serious diseases, requiring specialistic laboratory diagnosis and treatment.
6. Too much emphasis on specialized services. (Students obtain erroneous idea of medical problems.)
7. Tendency to diffuse responsibility for care of patient. Too many specialists.
8. Departmental independence makes for disorganization of study.
9. Lack of attention to the public relations side of medical practice.
10. Diversion from the old apprenticeship plan of education which was highly effective.
11. Breeds lack of confidence in ability to practice alone without assistance from laboratories, specialists, hospitals, etc.
12. Too great standardization of curricula.
13. Too little personal contact between teacher and student.
14. No time for freedom of reading and thinking in the crowded curriculum.
15. Too much emphasis on attendance; not enough on achievement.
16. Too many departmental examinations and too few comprehensive examinations.
17. Too much specialized training in undergraduate hours.
18. Too much rigidity and uniformity in medical education. (See 12.)
19. Too little consideration of the individual qualifications of beginners in the study of medicine aside from scholastic qualifications.
20. Medical education not maintaining pace with other university courses in following out modern pedagogical trends.

We might well look at our osteopathic educational institutions in an effort to determine whether or not they are guilty on any or all of the indictments which the Commission on Medical Education places against old-school medical educational institutions.

R. C. Mc.

WHERE STRENGTH LIES

There is strength in union—strength that is imperatively needed for the continued growth and development of osteopathy. Our organizations are flourishing in spite of the existing depression and it is becoming more and more apparent that no other investment has ever been made that pays so increasing a dividend, as does the fee for membership in our osteopathic organizations.

Individuals, singly, can do little in putting into effect the many projects deemed worthy of development, that give to osteopathic service the breadth and depth that will attract favorable opinion, financial support and its rightful place among the world's greatest blessings. With united purposes we can do those things that would otherwise be impossible of accomplishment.

The national Association is a well organized and completely functioning machine, which responds to every impulse that will further the interests of all osteopathic physicians. Each department, bureau and committee is well manned by hard working and conscientious men and women, who have at heart the best interests of the osteopathic profession.

We are proud of the contributions that are being made to organized osteopathy by the many who give freely of their time, effort and money.

VICTOR W. PURDY.

THE SENSORY RECEPTORS

Osteopathy is based on mechanical principles and so its practitioners are vitally interested in those physiologic processes which are primarily physical, as distinguished from chemical, in their nature. It is true that the processes of physical force and chemical interchange are so closely interrelated in the body economy that it is often difficult to differentiate the two in any given physiological process and to separate them arbitrarily. It is also true that in the minutiæ of molecular interchange and ionic rearrangement of protoplasm we are dealing with physiochemical processes which do not permit a distinction between two types of reaction but which rather illustrate a common denominator between the two forces of physics and chemistry.

There are, however, many physiological reactions which depend primarily on the physical forces of tension, pressure, fluid interchange and gravity. The chemical elements accompanying these reactions are secondary and dependent on mechanical forces for their initiation and normal consummation. A study of the sensory receptors shows that mechanical stresses and strains constitute one of the major stimuli of the nervous system.

"The most obvious difference between the various types of receptors lies in the nature of the stimulus which excites them, but if we exclude the special sense organs for the present the list of stimuli is not so formidable. The taste buds and similar organs are sensitive to chemical changes, and there are organs which respond to changes of temperature, but for all the rest the stimulus is a mechanical change. There may be specific receptors for a pressure, a touch, tension on a muscle, or a movement of a hair or of a joint surface, but in every case the stimulus is one which will produce some mechanical strain or deformation in the end organ."[1]

So-called osteopathic pathology is located in the joint structures and affects muscles, tendons, ligaments and joint surfaces. Osteopathic pathology is primarily mechanical, the chemical changes of edema and relative acidosis being secondary to the mechanical changes. These physical changes consist of alterations in pressure and tension in the tissues in the lesioned parts. Pressure is altered by an abnormal approximation and fixation of joint surfaces. Tension is altered by muscular contractions, ligamentous stretching, an increased fluid content of the tissues, and by fibrosis. All of these changes have been shown by the research quoted above to be an adequate stimulus for the sensory end organs located in the respective tissues.

The condition of the tissues around an osteopathic lesion is such that the abnormal tensions and pressures are maintained in a relatively constant state. The physiologic rhythm of contraction and release is gone. The result of these maintained changes in periarticular structures is a bombardment of the spinal centers concerned by a stream of abnormal impulses.

Further studies in this series will deal with the precise measurements of these impulses as they travel over the nerve from the sensory end organs and also with the evidence available of their effect on viscera and somatic structures segmentally related to the area of lesion.

R. N. MACBAIN.

[1]Adrian, E. D.: The Basis of Sensation, Ed. 1, New York City, W. W. Norton & Co., Inc., p. 72, 1928.

MAINTAINING THE GOLD STANDARD

While politicians, financiers, journalists and other leaders and would-be leaders of public opinion are busy discussing the gold standard, every day men and women are asking, "Why all this fuss? What is the gold standard, anyway?" And it is no easy task to explain its meaning to the multitude.

In the realm of osteopathy there is a gold standard which needs neither elaborate explanation nor clever defense. It is all-important to maintain it at the present time, however, for it is the gold standard of earnest scientific effort and sincere humanitarianism, the standard upheld by Osler and all the other great masters of therapeutics and kindred sciences, and by none more than our own Dr. Still.

Whether we have prosperity or depression, whether osteopathy flourishes or seems temporarily under a cloud, the osteopathic physician should not relax one jot of his resolve to get at the scientific facts of every case nor forget for a moment his duty to humanity. Indeed, the extra leisure which comes through a lull in business is the very time for all aspiring and ambitious workers, and especially for doctors, to fit themselves for finer service by more study, research and experiment.

Enthusiastic doctors often lament the lack of time for study, often say what they would learn and accomplish if they could only get more time to themselves in library or laboratory. Now is their chance, and opportunity means responsibility.

It is up to the men and women of the osteopathic profession to maintain the gold standard.

C. H. M.

AFFILIATED AND ALLIED ORGANIZATIONS

It is our intention to comment from time to time upon the work of the various sections and of the various affiliated organizations whose work is a part of the activity expressed through professional organization channels. The various professional sections, the allied societies and several affiliated organizations of the Associations are mere names to a large proportion of the members; but the officers and members of these allied societies and affiliated organizations are continually on the alert and are always working to carry out some particular line of activity, the need for which has become apparent.

We shall mention first one of the less known in the organization, the Section on Obstetrics and Gynecology whose program chairman again this year is Dr. Margaret Jones of Kansas City. She and her helpers are preparing a particularly strong program for the section at the Milwaukee convention. Some of the leaders of the profession will appear upon that program. Demonstrations and clinics of extraordinary value are contemplated. The membership of the section is determined that a proper conception of what osteopathy has to offer in obstetrics shall be presented not only to the section members but to the profession at large.

A recent compilation of statistics with respect to the success of osteopathy in the handling of obstetrical and gynecological problems has been of such startling and favorable nature as to draw the profession's attention again to this important field of practice.

There is apparently as well an ideal upon the part of many of these obstetrical and gynecological specialists that by far the largest proportion of the care of these two fields of practice must be undertaken by the general practitioner. In these days of the segmentation of practice it is quite refreshing to find one group (we do not say that there are not others) that realizes the extreme importance of a high degree of proficiency in the rank and file of the general practitioner in the problems relating to its field.

R. C. Mc.

REVISION OF ORGANIZATION LAWS

As announced some time ago, President V. W. Purdy has appointed a committee very well equipped to consider the Constitution and By-Laws of the Association and to recommend to the House of Delegates any proper revisions of this basic law of the organization.

The committee will be glad to receive, and give careful consideration to, any constructive suggestions with respect to bettering the provisions of the Constitution. All suggestions should be sent to the Central office for transmission to the chairman of the committee, which consist of Chester D. Swope, John A. MacDonald, Ray B. Gilmour, and R. C. McCaughan.

Since the committee will of necessity make its report early, it is desirable that any such suggestions be received in the immediate future. It will be desirable to publish all suggested constitutional revisions previous to the time of the Milwaukee convention in July, where it will be necessary to read these provisions before the House of Delegates at that convention, and to pass upon them finally at the succeeding convention, that of 1934. Amendments to the By-Laws can be filed, published and then adopted at the 1933 meeting.

R. C. Mc.

THE PHYSICIAN AND THE DENTIST

For many years there has been a growing respect on the part of the physician for the work of the dentist. Late training of dentists has made them experts in their line and has made their diagnosis and treatment invaluable in the work of the general physician. The dentists themselves have shown that they were willing and anxious to coöperate with physicians. True, some of them have an exaggerated idea of the importance of their work, but so do all of us. They are, as a class, more and more careful and the better ones more and more dependable.

How many of us have, on the case records which we keep for our patients, recorded even so much as the name of the patient's dentist? How often do we send the patient to "just any" dentist and accept a word of mouth report from the patient, rather than being in touch personally with the dentist by phone or through written report so that we may satisfy ourselves as to the importance of the dentist's report and the pathology which he has discovered in relation to the patient's whole picture?

There is, of course, still some bad dentistry and there are some poor dentists. It is the physician's duty to know whether or not the dentist whose report he accepts is reliable and efficient.

Since the patients have personal preferences, amounting in many instances almost to prejudice, with respect to the dentists whom they shall select, it is wise for the physician to have in mind the names of several good and reliable dentists upon whose diagnostic and therapeutic ability a patient may depend, so that the patient may have a choice of several dentists, all good.

Most of us know how frequently a doctor is forced absolutely to refuse service to a patient until a careful dental examination or certain obviously indicated dental work has been undertaken.

The whole relationship between dentist and physician is one of delicacy but it is also one of importance.

R. C. Mc.

. . . realize that there is no better way to uphold the merits of your profession than to be able to treat as you have been taught to treat.—F. E. Zinn, The College Journal.

STUDENT LOAN FUND

It is of interest to the whole profession to note one fact which comes to light in the perusal of the comments accompanying contributions to the Student Loan Fund which the Association sponsors for the American Osteopathic Foundation.

In spite of the fact that it has been difficult for many to contribute even the small amount for the Christmas seals, the spirit of the contributors and those who cannot contribute is excellent. It is generally recognized that such a fund serves a laudable purpose, but another fact even more striking stands out.

A very large number of osteopathic physicians are providing the necessary funds to send one or more students to osteopathic colleges for education, and many other osteopathic physicians are helping financially in the struggle which new graduates are having in these times to establish themselves in practice.

It is not at all unusual in the comments which come in to the Central office, literally by the hundreds, to find that an osteopathic practitioner is aiding financially, not one, but, in many instances, three or four students to complete their education. It seems to us that this is one of the finest manifestations of gratitude to a profession, which makes an opportunity for all of us to render service, that could possibly be made manifest. Not only are these generous donors satisfied that osteopathy has a service to offer to humanity, but they are so thoroughly satisfied that this is correct that they are willing to go out and help to provide education to those who can supplement the work of the all too few of us in the field already. The type of profession that has listed in its ranks many of this variety of philanthropists will ultimately go far. The spirit so expressed is an incentive to every osteopathic student to repay that kind of devotion to a profession by sincere application to study and determination to become the best possible sort of physician.

R. C. Mc.

ANOTHER GIFT

As the forms for this issue of THE JOURNAL go to press, we receive from Dr. Virgil Halladay, Chairman of the Board of Trustees of Sigma Sigma Phi, honorary osteopathic fraternity, the check of the fraternity for $200.00 as a contribution to the Student Loan Fund.

We believe we express the sentiments of the whole profession when we thank Sigma Sigma Phi, not only for their generous and material contribution to this fund, but for the evident spirit of desire to encourage osteopathic education which such a substantial gift indicates.

Prepare Now to Attend the Milwaukee Convention

DEMAND FOR POSTGRADUATE WORK

In one mail the other day there came into your Association office the names and addresses of four osteopathic physicians who are desirous of finding a connection in which they can learn, by experience and observation, to practice good surgery. So far as they know there is no place now available where they can find that instruction. Four in one day is of course unusual, but regularly we hear some such plea, not by any means always with respect to the surgical specialties.

Diagnosis is sometimes mentioned. Technic is constantly demanded, as is proved by the technic demonstrations at any national convention. But the inquiries are increasing and the opportunities should be provided.

We are inclined to believe that they will be provided as soon as the demand from the profession is made apparent.

There are physical obstacles. Postgraduate instruction is expensive to the instructor as well as to the physician. The price must be paid. Until such time as proper postgraduate work can be provided through hospital and school endowment, it will probably have to be undertaken by our ever-willing schools on a tuition basis.

There are signs that this plan is about to be adopted. The demand needs to be only a little more vocal and positive.

R. C. Mc.

ARIZONA

We welcome into the Association the newly organized Arizona Society of Osteopathic Physicians and Surgeons. The organization was consummated November 12, 1932, and the charter of the American Osteopathic Association was issued to the new group on November 28, 1932.

While Arizona is a large state and, comparatively, a sparsely settled one, still its professional problems are much the same as those of every other state. Some of its practitioners are especially active and the new organization bids fair to be a real factor in national affairs.

Because of the climate, the physicians of the state receive annually cases referred by osteopathic physicians all over the country and the practitioners in that state have been handling such referred work in excellent fashion.

It is good to see this added evidence of the value of state organization.

But four states in the Union are now without state associations. They are Mississippi, Nevada, New Hampshire, and Wyoming. It is to be hoped that these groups can organize themselves so that they may coöperate for the betterment of conditions within their states and may send representatives to the House of Delegates of the American Osteopathic Association.

MORE OSTEOPATHIC MOTION PICTURES

Motion pictures have been taken by a professional photographer, showing all of the standing examination methods described in the series of articles by W. A. Schwab which have been running for a number of months in THE JOURNAL.

The series includes three pictures of sacro-iliac palpation diagnosis—the regular speed and two different speeds of slow motion pictures. Two different speeds of slow motion pictures have also been taken, showing all phases of the two-operator technic for sacro-iliac and lumbar treatment, which it is planned to describe later in the series.

Dr. Schwab plans to use this film in his lecture work at various conventions.

Department of Professional Affairs

JOHN E. ROGERS, Chairman
Oshkosh, Wis.

BUREAU OF PROFESSIONAL DEVELOPMENT

ARTHUR E. ALLEN, Chairman
1127 Metropolitan Bank Bldg.
Minneapolis

GETTING NEW IDEAS

No new idea regardless of how radical and unusual it may be should be overlooked or laughed at. This Bureau is especially interested in new ideas that pertain to the practice of osteopathy. Many ideas that today seem impossible are admitted tomorrow as facts.

Many members of our profession are consciously or unconsciously doing private research daily. They have developed ideas and methods which they hesitate to offer to the profession because they may be at variance with present accepted practice. However, they continue to use them in their own practice and obtain results. These of our profession should be encouraged to present their ideas before District and State conventions. Program chairmen should ever be on the lookout for such speakers; time could well be allotted on every program for just such presentations.

Clinical support must be required of course, and each new idea thoroughly examined. If it will bear thorough investigation, it may be referred to this Bureau which will make whatever recommendations and suggestions deemed advisable to assist in further development. When there is merit in a theory it can be worked out eventually.

Another method of getting at the same idea is holding round table discussions on the effects of specific lesions as demonstrated in individual private practice.

Our profession is new and undeveloped; and it is our obligation to welcome and show interest and enterprise in the proving or disproving new theories. This will limit the harm that wrong theories may produce and also bring forward the meritorious methods as soon as they may be made available, for the benefit not only of the profession but also of the public.

A. E. A.

Department of Public Affairs

E. A. WARD, Chairman
Saginaw, Mich.

COMMITTEE ON OSTEOPATHIC EXHIBIT DEMONSTRATION CLINIC

DELLA B. CALDWELL, Chairman
Des Moines, Ia.

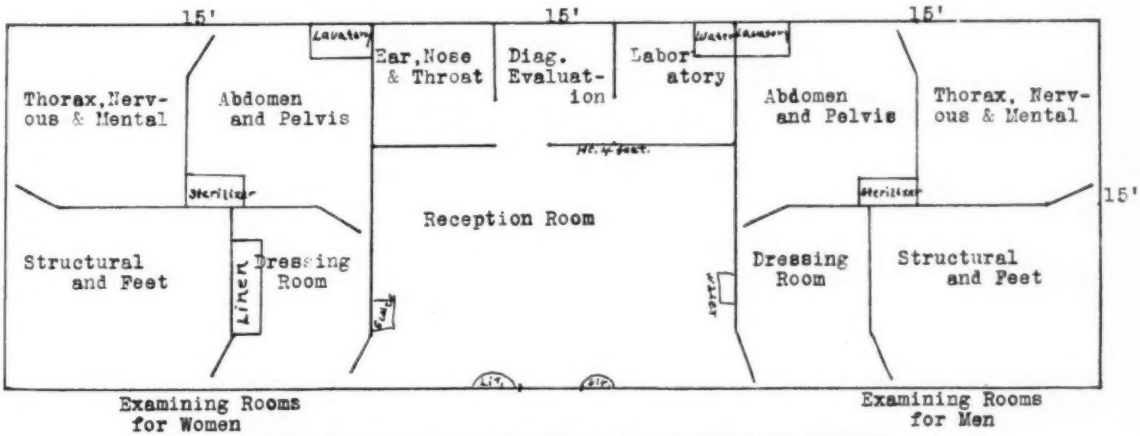
ADULT HEALTH CLINIC AT IOWA STATE FAIR

One of the remarkable things about the adult health clinic held at the Iowa state fair was the amount of publicity secured. Not only did all of the profession receive letters on the subject, but also members and candidates for the legislature. The state fair board sent news stories to the most prominent papers in the state. The Des Moines *Register* gave good space. Many local papers mentioned the part taken by the doctors in their communities. Twenty-five dollars was paid for a half page on the back cover of the Grand Stand program, twenty thousand of which were distributed daily. The best publicity of all, perhaps, was the talking campaign by the 368 individuals examined and their friends.

Every state president and the chairman of every state exhibits committee should evaluate this public educational angle in terms of benefit to the profession in his own state and in all other states as well. You will never have more satisfaction from service rendered to osteopathy than in the type of service the adult clinic affords.

The moral and financial support of every practitioner in your state would be ideal, but we seldom have ideal conditions. With proper presentation you will have the moral support of the majority, and the financial support of a sufficient number to assure success. Sixty-nine persons financed the Iowa clinic, and almost as many contributed their services during the week. From the rest of our 373 practitioners there was practically no opposition.

There are at least ten states that can do as well as Iowa has done, perhaps better. What would ten times the publicity received by Iowa mean to the osteopathic



FLOOR PLAN OF THE IOWA ADULT HEALTH CLINIC

profession now and in the future? Think it over and then get busy.

To assist in planning, the following information is submitted:

The floor plan on this page was substituted for the one published last year, because of limited floor space and the necessity of keeping down expenses. The three rooms were bare except for one 100-watt light in each room, furnished by the Fair Board. These rooms were divided as shown in the plan. Three lavatories, electric connections for extra lights, fans and sterilizers were installed. These and the movable partitions are the property of the profession, and are ready for use in the future, thereby largely reducing future expenses.

This plan proved very satisfactory with but a few exceptions, and those exceptions were largely due to lack of space, and the great number to be examined. We now know there must be two dressing rooms and two examining rooms for women, also a private room for the evaluation section. The work in this section demands such intense concentration that more seclusion and shorter hours of work are necessary. Here is where all work of the other sections is correlated, corrections made if necessary, diagnosis given and treatment outlined. This work is the keystone in the examination arch, and great care should be taken in selecting its staff, and in giving them a suitable room. There should be at least four men assigned to this department. They can examine in other departments while resting from this.

Another desirable change is to have two men giving ear, nose and throat examination, and to have these made first instead of last. This will facilitate the work, and by putting the structural examination last a stronger impression is left of the importance of the structural integrity of the body.

There will be another room added to this plan next year to provide for the changes outlined, and increased clientele. Any furniture store will outfit the reception room with chairs, tables, rugs, and mirrors in the dressing rooms. The greatest items of expense are floor space, partitions, stationery, mimeographing and postage, but if you are sold on the adult clinic yourself because of its great possibilities, you can sell it to your people, and the money will be provided according to your needs.

D. B. C.

State Boards

Iowa

Sherman Opp, Creston, secretary-treasurer, reports that the Iowa State Board of Osteopathic Examiners will hold the next examination, January 23-25, at the Des Moines Still College of Osteopathy, 722 Sixth Avenue, Des Moines. Application blanks may be obtained from Dr. Opp. This notice is for sophomores as well as graduates.

Michigan

F. Hoyt Taylor, Lansing, was appointed by the governor to membership on the State Board of Osteopathic Registration and Examination.

Vermont

R. L. Martin, Montpelier, secretary, reports that the Vermont State Board of Osteopathic Examination and Registration will hold the next examination, February 2 and 3. Further information may be obtained from Dr. Martin.

West Virginia

The next meeting of the West Virginia State Board of Osteopathy will be held in John H. Robinett's offices, 612 First Huntington National Bank Building, Huntington, February 6 and 7.

Those wishing to take the examination or who will seek a license through reciprocity, should communicate with Guy E. Morris, secretary, at 542 Empire Bank Building, Clarksburg, at once.

Milwaukee Convention—Century of Progress, 1933

Diagnosis and Treatment

HIGH VERSUS LOW PROTEIN RATION IN NEPHRITIS*

W. DON CRASKE, D.O.
Chicago

This paper could just as accurately be called the protein ration allowed to nephritics today in contrast with that in the past.

We have learned through the critical research of such men as Epstein, Elwyn and Christian, that too often the protein poor diet of former times superimposed a metabolic deficiency upon the already existing disease entity of nephritis.

This was first developed in the investigation of chronic lipoid nephrosis. Here it was found that the great protein waste, due to the constant albuminuria, so impoverished the blood proteins that in a pronounced case there was an actual inversion of the serum albumin-globulin ratio. The serum-albumin, which normally is nearly twice serum-globulin, was reduced to one-half or less, due to renal leakage.

Associated with this was a definite retention of blood chlorides until a figure two or three times normal, or even more, was found on blood analysis.

The combination of these two factors was therefore attacked therapeutically. First, by withholding sodium chloride—the most prolific source of blood chlorides—from the diet; second, by feeding large amounts of protein calculated not only to offset the waste by albuminuria, but, in addition to meet the protein metabolic needs of the body as well.

The results were conclusive. The edema, which is a most marked characteristic of the disease, vanished. The blood-pressure slowly reduced to within normal limit, and the general vigor and health of the individual markedly improved in step with an increasing red blood count.

However, the albuminuria continued for long periods unchanged. Though with those individuals who were fortunate enough to avoid intercurrent disease, after months of time, a gradual lessening occurred until finally in a favorable case the albumin in the urine was reduced to a trace. In step with this progression, a gradual increase in the general renal secretory ability was noted.

Stimulated by this success, the search was carried on into the various other forms of nephritis with the result that today we view the problem, as a whole, through somewhat different eyes.

We know that the waste products of *protein metabolism* are not the most difficult for the kidney to excrete. Also, that nitrogen retention is of itself not of such tremendous moment as formerly held.

The creatinine blood content, which formerly was viewed with such great alarm as it gradually climbed in the blood serum of a nephritic who was losing his fight for life, is more an indication of a growing protein metabolism deficiency than of a progressive inability of the kidney to secrete protein waste material. In short, that creatinine is derived from the body's self-metabolising of its own muscles in order to meet the protein metabolic needs of its vital centers.

From the standpoint of blood chemistry an increasing importance is being attached to the sodium chloride retention in the blood as the active factor in the production of the malignant phases of nephritis, especially with reference to uremic coma, convulsions, edema and hypertension. Consequently, today a nephritic is placed upon a salt-free diet, or, if he has a relatively mild case, a low salt diet.

He is allowed protein in a ratio of ½ to 1.5 grams per kilogram body weight depending upon the age, which is an all important determining factor in the metabolic needs of the individual. In the case of fever, he is allowed ¼ to ½ a gram more per kilogram body weight for each degree rise in temperature.

When urinary wastage of protein is great, this also is restored to the body through the alimentary tract in direct proportion to the loss.

The upshot of this method of meeting the nephritic situation is that the patient has a greater ability to pre-

*Delivered before the Diet Section, A. O. A. Convention, Detroit, 1932.

serve his health and body vigor. What secretory ability his kidneys still possess is kept available to him for the secretion of the normal metabolic wastes without the addition of products of perverted body metabolism resulting from protein starvation.

The sodium chloride content of his body is kept within normal limits, thus making it more easily possible to preserve the fluid balance of the tissues, and to that extent precluding the possibility of anasarca or localized edemas, such as "wet brain" with the attendant coma and convulsions.

In conclusion, we may say that the care of the nephritic is improving.

In chronic lipoid nephrosis this improvement has been revolutionary. Elsewhere in the field of nephritis the fuller concept of the metabolic background to the disorder has led to scarcely less improvement.

25 E. Washington St.

American Osteopathic Society of Proctology

PRESIDENT'S ADDRESS DETROIT MEETING

PERCY H. WOODALL, D.O.
Birmingham, Ala.

The attendance at this opening session is most gratifying.

Since economic conditions have curtailed incomes in all vocations the number of our members present not only indicates a more than average degree of prosperity but an earnestness and enthusiasm in the practice of proctology that is most gratifying. While we are here primarily to become better physicians, to cultivate a spirit of fraternity and helpfulness is by no means the least of our purposes.

Economic conditions are a challenge as never before for more profound scientific knowledge of effective and speedy relief of disease. We must improve in all lines if we would survive. Our services must be the best obtainable. It should be our pride to make them so. Our chief concern must be work of quality.

Conditions also demand the best business methods. We should insist on the prompt payment of adequate fees from all those able to pay. Let's make our primary aim the best possible service, the fees subordinate to this.

As specialists we profess a more profound and extensive knowledge of our particular branch of medicine and surgery than the average physician. This brings an added responsibility and obligation. These we must meet and can only do so by making our preparation and ability equal to our profession.

I would warn our society against the danger of overspecialization. As important as it is, our specialty does not run the entire gamut of human suffering. We must not see in it the cause and cure of all human ills, but remember that one part is not the entire body. Specialists have often been justly criticised for considering all disease from the narrow and restricted view of their particular interest. We should be receptive of truth from any source but accept no man's dogma or opinion until tried in the crucible of our own reason and experience.

We must not forget that this is an osteopathic society of proctology. The osteopathic concept adds to our practice a measure of success that can be approached by no other school of practice. If any part of a general examination is neglected it should not be that peculiar to osteopathy. Such an examination enables us to evaluate the disturbances that may result from lumbar innominate, sacral and coccygeal irregularities. Osteopathy is an invaluable aid in diagnosis and prognosis; makes our therapy more specific and certain and our failures markedly fewer. Osteopathic lesions explain many disagreeable symptoms and their removal assists in many cures. Conditions due primarily to them are not remedied alone by correcting anorectal pathology.

I suggest to our members that they give more attention to the art of practice. Next to competence as a necessity for success, doubtless, comes gentleness and consideration. You will appreciate this more fully whenever you may become a patient. We should be artists in the application of our therapy. A deft gentle touch and a considerate attitude should be cultivated. Let's strive to develop as nearly as possible a painless technic.

No specialist occupies so delicate a position before the public as the proctologist. We should be meticulously careful to maintain the dignity of our work. We should ourselves avoid and resent in others any act or suggestion that reflects upon the standing or dignity of proctology or that might prevent its being held in the highest estimation or esteem as a specialty.

We are an affiliated organization of the American Osteopathic Association and loyal members of that organization. In the Code of Ethics of the Association there is one section which we violate without intention to be disloyal and I suggest that we support an effort to secure such a modification of this section as will allow us the unquestioned privilege to use such legitimate and ethical publicity as we may desire.

American Osteopathic Society of Ophthalmology and Otolaryngology

A. C. HARDY, Editor
Kirksville

NASAL TURGESCENCE AND ITS CAUSES LOCAL AND GENERAL

W. V. GOODFELLOW, D.O.
Hollywood, Calif.

Erectile tissue plays an important part in the function of the nasal chambers. Its distribution throughout the nose is widespread, but particularly on the anterior end of the inferior turbinated bones and to a lesser extent on the anterior end of the middle turbinated bones. Nasal air tension is controlled by the vasomotor nerves supplying the erectile tissue. The importance of this mechanism in maintaining normal nasal function, and indirectly the structural integrity of the nasal chambers, cannot be overestimated. Many factors enter into the disturbance of this mechanism and alter the air tension in one or both nostrils.

Structural abnormalities, such as ridges or spurs on the septum or deformed turbinated bones, as a cause of nasal stenosis are familiar to all. Obviously, well directed surgery is the only solution of the problem when the cause is a structural abnormality. Incidentally, emphasis should be laid on the fact that structural deformities, especially of the septum, are not the cause of nasal disorder except they be extreme enough to produce contacts and thus disturb the vasomotor mechanism of the nose.

Nasal stenosis is one of the symptoms and nasal turgescence is one of the necessary reactions whenever the nose is invaded by virulent bacteria. If this reaction is within reasonable limits the invading irritant will be swept from the area and the turgescence will promptly subside. To follow the time-worn custom of using sprays, nebulizers and the like in cases of acute turgescence may only result in handicapping nature in a difficult situation. The normal secretions of the nose have a germicidal or digestive effect upon air-borne bacteria similar to the effect of the lacrimal fluid. During the period of turgescence the circulation to the mucus-secreting glands of the mucous membrane increase their activity and supply the necessary cleansing fluid for washing away the invading irritant. This entire procedure on the part of nature is just as beneficial and as well directed as the process of the healing of a wound. To interfere needlessly with it is likewise just as harmful as it is to interfere with a healing process. Likewise the beneficial reaction on the part of nature does not accomplish the results immediately; neither does a wound heal immediately. Nature's processes are slow. The doctor should never make the mistake of expecting to give the patient immediate complete relief from nasal turgescence in cases of acute infections,

but should advise them that within reasonable limits this is a beneficial reaction and that like the reaction of a healing wound the patient must endure the discomfort for a reasonable length of time. We are speaking now of those cases in which no structural abnormalities exist or in which the inflammatory reaction might be considered normal.

Ballinger classes inflammation under three headings: adequate, inadequate, and excessive. He also describes an inflammatory reaction as a natural reaction to a noxious irritant. The tearing of an eye to wash away an irritant is no more beneficial and no better directed than a nasal turgescence with rhinorrhea caused by the presence of a noxious irritant. If, however, the inflammatory reaction is excessive, causing a nasal turgescence violent enough to produce a nasal stenosis, then nature's beneficial reactions have gone awry and it is time for the physician to reestablish as nearly as possible normal tissue reaction to the irritant. This is usually best accomplished by manipulative treatment designed to reduce venous congestion and stimulative arterial flow, coupled with the application of either heat or cold as the case may require.

The use of antiseptic solutions to destroy the invading bacteria are not satisfactory, only adding an additional irritant to one already present. If a vasoconstricting agent is used to temporarily relieve the discomfort from the turgescence, the patient pays the penalty a few hours later when over dilatation takes place accompanied by excessive stenosis. Continued use of vasoconstricting agents then becomes necessary and soon a degree of vasomotor paralysis ensues and the patient has a long road to ultimate recovery.

Bearing in mind the physiology of the parts, one will hesitate to use any of the long list of medical sprays and inhalants which are foisted upon the public by an unthinking medical fraternity and unscrupulous patent medicine houses.

Gastro-intestinal pathology is often overlooked by the specialist and may be the cause of excessive turgescence both acute and chronic. Like the tongue, the mucous membranes of the head are a good barometer of the conditions in the abdomen. We have long been familiar with the typical congestive headache accompanying gastro-intestinal disorder. This headache is caused by circulatory changes due to vasomotor imbalance, the cause of which is in the congested liver or sluggish colon, or may be due to overeating or to toxic irritants absorbed from the colon. The circulation to the mucous membrane of the head including the erectile tissue of the nose shares in this vasomotor imbalance. Is it any wonder then that we find acute and chronic turgescence the direct result of gastro-intestinal disorder. Under these circumstances it is just as sensible to expect local therapy either of a mechanical or chemical nature applied to these membranes to produce results as it would be to treat a coated tongue and overlook the cause in the abdomen. This does not mean that a man in general practice has the right to assume that attention directed to gastro-intestinal abnormalities will cure acute or chronic turgescent rhinitis, but it does mean that there should be an intelligent coöperation between doctors and an intelligent diagnosis made and that the therapy applied should be directed to the removal of causes in the nose, and also in the abdomen.

As osteopathic physicians, believing in the adequacy of the natural means of relief and repair, we should be just as quick to discard the irrational nasal sprays, douches and antiseptics as we are to discard irrational tonics, physics and stimulants. If we apply our fundamental osteopathic principles to the diagnosis and treatment of the mucous membranes of the nasal chambers we will normalize these structures in all cases except those having structural abnormalities and will save a great deal of unnecessary surgery. We must not overlook, however, the presence of chronic infection of the nasal accessory sinuses, ethmoid cells and infected teeth. These are causes of chronic turgescent rhinitis with acute exacerbations and may be the cause rather than the result of gastro-intestinal disorder. This again emphasizes the necessity of a complete diagnosis followed by a rational therapy directed to the removal of the etiological factors. Emphasis must be laid upon the fact that turgescence or swelling of the erectile tissue of the nose is a beneficial rather than a harmful reaction and unless this reaction is excessive it should not be interfered with, especially by the use of drugs. Neither should the erectile tissue of the nose be subjected to unnecessary surgery or cautery for the relief of turgescence. The excessive erection of this tissue has causes the removal of which will restore it to normal.

606 Guaranty Bldg.

Athletics Section

THE CARE OF ATHLETES BY A WOMAN*

OLGA H. GROSS, D.O.

Pittsfield, Me.

The only reason for my appearing on this program is my sex, for there are still a few of our members who think that athletic work is for "men only." So I have been asked to tell how a weak sister does it.

Some may want to know how I made my first contact in treating athletes. I didn't. "It" limped in accompanied by the principal of the Pittsfield high school. The victim was the team's best man and the success of the football season depended on him. He must be restored to the game, and that quickly. He had been out ten days already.

Fortunately for me, the young man diagnosed his own case, for never had I heard of charleyhorse, and the texts I later consulted did not give much information. While I recognized the pathology involved, I was not quite sure of the best treatment to insure the quickest recovery, and so suggested that we consult my nearest colleague in a town twenty-four miles away.

Dr. Brown outlined the treatment, and within a week this 190-pound athlete was back in the fray, "fit as a fiddle."

Imagine my amusement (for I was on the sidelines) when I overheard the woeful comments by some of the fans regarding the boy's returning so soon after his supposed injury. They thought it criminal, for it would cripple him for life. This cripple (?) is now a successful coach in the next town and I treat his boys.

This was my entering wedge. Since then I have taken care of all types of injuries athletes are heir to and their various illnesses.

The time of recovery has of course been much shortened since that first experience. It is the coach's boast that last year no boy was out of the game because of injuries; for I get them fresh from the field of battle—mud, dirt and all that goes with it. But who cares? During the football season I reserve the latter part of the afternoon for the boys. This keeps the coast clear, so no dainty lady may be offended by the sight and odors of perspiring, muddy boys. I also stay in on Sundays for their special benefit, for most of the games are played on Saturdays, and many of the minor injuries are not detected till the following day.

I have always enjoyed splendid coöperation from all the coaches and their assistants, it has been a joy to work with them. In the beginning, when I suggested that another physician be summoned in serious accident cases, they would assure me that they had all faith in osteopathy.

My relations with the boys have been as pleasant. Several have become interested in our science, and I expect one or two will matriculate this fall.

Maine Central Institute has the reputation of being one of the best prep schools in the state and has furnished several candidates for the Olympics. One of our graduates was chosen full back on all New England second team; another was tackle on all New England team; another ranks as one of the three best hammer throwers in the country. But the boy who advertised osteopathy most was a young lad who hurt his right arm in football. He was examined by x-ray in Portland and told that nothing was wrong, and advised to use iodex and heat and he would be all right. The arm became worse and finally he came to me in January. At that time he could not even throw a snowball. After two month's treatment he not only played baseball but held the state record for the javelin throw. Today, two years later, he is pitcher on a varsity team. The coach uses this as an example of what we can do for athletes.

*Read before Athletics Section, Detroit, 1932.

I love every branch of osteopathy, but there is nothing that equals the thrill that comes from taking care of athletes, nothing more purely osteopathic. These boys come to us because we have something specific to offer. I have often heard them remark that some medic gave them pink pills for their injuries, and they thought that a huge joke.

I think there is no other specialty that advertises osteopathy as this. I believe this work is responsible for my having so many industrial and private accident cases. Last year my accident work (industrial and private) and my athletic work was half of my total. And last year was the biggest I have had.

Foot Section

IMPORTANCE OF THE PROPER SHOE IN THE TREATMENT OF FOOT CONDITIONS

HAROLD E. CLYBOURNE, D.O.
Columbus, Ohio

The first crude shoes were no doubt the result of a need for protection. They were built for a practical purpose and, had we followed the course of shoe building started then, we would have little to do now in the practice of treating feet. Gradually conditions proved that the original shoes no longer gave adequate protection, and man's increased intellect brought about a desire for beauty in shoes. Today more people buy shoes to please their eyes than to fit their feet.

Orthopedic surgeons agree that most deformities of the feet are due to faulty shoes and hose. More people have been crippled by faulty shoe fitting in the past ten years than by bullets during the World War.

The four arches of the foot are held in position by the muscles of the foot and leg. If these muscles lose their strength and tone there is a sagging of the arches with resulting strain thrown upon the rest of the foot and leg.

The outer longitudinal or weight-bearing arch running from the heel to the base of the small toe is the support arch of the foot and corresponds to the arch of a bridge which rests upon two abutments. There is no spring to this arch and its sole duty is for support of weight. The other three are suspension arches to give the spring and resiliency to the foot in action. These three are the ones first affected by strain or by the movement of one base of the weight-bearing tripod of the foot.

The inner longitudinal is the spring arch and is of the suspension type, deriving its support from the foot and leg muscles and having the heel and the great toe joint as the bases.

The metatarsal is another suspension arch, dependent upon the muscles of the foot and the inner and outer longitudinal arches. Should either of these weight-bearing points be moved, this arch as well as the innner longitudinal arch, will sag. The transverse arch running across the tarsal region of the foot is also of the suspension type and will also be affected by displacement of the weight-bearing points.

Thus you can readily see that the foot is made up of three suspension arches and one weight-bearing arch, all dependent upon the proper position of the three weight-bearing points of the foot, namely, the heel, the base of the little toe and the base of the great toe.

When a suspension bridge begins to sag the engineers do not place a brace under the sagging arch, but immediately go to the weight-bearing points and lines of suspension and remedy the conditions there. Surely physicians can take a hint from them and treat the same condition in the foot in the same manner.

Height of the arch does not indicate the condition of the foot. You have all examined feet with very low arches which gave the patient no pain, and feet with very high arches in which, although there was very severe pain, the pedograph gave a normal outline. Foot symptoms do not come from low arches but from foot strain.

Arch supports should never be used unless as a splint in case of fracture. They should then be removed as soon as possible. Whitman states in his book, "Orthopedic Surgery," that "the brace should at all times suggest and enforce a proper attitude. The inner side of the foot is instinctively drawn away from the pressure and thus toward the normal contour of the foot. The pressure of the brace is first felt upon the lateral aspect of the foot, a pressure that the patient can relieve by improving his attitude." The principle of the arch brace, therefore, is to make the foot so uncomfortable that it assumes a correct position. How many physicians prescribing arch supports have understood this?

Nearly every foot condition not due to trauma is caused by a rotation of the os calcis, which in turn throws strain on all the arches and destroys the normal position of the three weight-bearing points. Lines of force, and the action of foot and leg muscles are all changed. This is especially true in feet with hallux valgus.

I have examined and operated on very few feet with this condition in which there was not a rotation of the os calcis with the lines of force thrown upon the great toe joint instead of down each metatarsal and phalangeal bone. This causes an aversion of the whole foot with resulting strain thrown upon all foot and leg muscles. It is because of this condition that operation of hallux valgus without postoperative treatment of the foot is not successful. The combination of these two without the proper shoe is also unsuccessful. Careful combination of all three factors has completely changed the results heretofore secured in the operation for hallux valgus.

Nearly everyone is born with perfect feet but years of poor and improper fitting of shoes has made us a nation of cripples. It is estimated that 90% of the people of the United States have some type of trouble with their feet. Many are unaware of the fact that they have foot trouble and are undergoing various types of treatment for the symptoms which arise from foot strain and which closely resemble rheumatism. Only 10% of the people with foot and leg symptoms have flat feet, while 60% of them have normally high insteps. I have found that the patients with the high insteps have the most painful feet.

SYMPTOMS

Strain of joints and muscles and loss of foot motion are responsible for most foot symptoms, the most common of which are the following: (1) Tired feet, legs and back; (2) aching and cramping muscles under the arch; (3) cramping toes; (4) bunions; (5) callouses; (6) numbness and burning of the feet; (7) pain in the heel; (8) painful and stiff knees; (9) weak and puffy ankles; (10) pain in hips, thighs and back; (11) fatigue and irritability throughout the body.

Again let me say that many people are treated for rheumatism when the trouble is in the feet, the symptoms of which closely resemble rheumatism.

To care properly for various foot conditions, it is absolutely necessary to have the patient wear the proper shoe for his foot. A survey of the fit of shoes of a group at the Wisconsin State Fair revealed the following: 40% of the men, 14.07% of the women, 45% of the boys, and 32.09% of the girls were well fitted.

Though many of these people were wearing properly fitted shoes, in reality they were potential foot sufferers. In the last twenty-five bunion cases operated on I find that everyone except two can trace their bunions to one certain pair of ill-fitting shoes.

Who is to blame for this situation—the manufacturer, the salesman or the customer? I feel that the blame can be placed equally on all three and it is up to us to educate each of them if we are to have any lasting results in our treatment of foot conditions.

PROPER SHOES

Little attention has been paid to baby shoes, mostly because of lack of knowledge. A baby should not be forced to walk until it is ready. The development of the muscles of its feet is a gradual process and varies in different individuals. When the baby feels that its muscles are not on a strain and there is no discomfort, it will begin to pull itself up and gradually start to walk. From this time the leg and foot muscles will develop rapidly. The shoes placed on the feet should in no way interfere with the foot action.

All children walk about the same for the first five years of their lives, then due to shoes and other environment they gradually develop their own individual gait. Much of this change can be traced to shoes.

Baby shoes, those worn up until about two years of age, should have the following points: (1) Be made of soft pliable kid without stiffening; (2) follow the normal outline of the foot, and have a full upper, preferably of the moccasin type; (3) be one inch longer than the foot and one-fourth inch wider; (4) have a narrow heel.

The shoe worn between the second year and the sixth must be more substantial and close watch must be kept that they are not outgrown.

Shoes for the six to ten-year-old child appear quite different and the following changes should be noted: (1) Most important, a counter that fits closely and tapers to the top so that the heel is hugged—this is the only part of the shoe that should fit snugly; (2) a low heel—from three to five the heel may be twice the thickness of the sole and later about three times the thickness of the sole; (3) plenty of length—at least an inch longer than the foot; (4) plenty of toe room so that toes can assume a normal position. The slightest pressure will cause the toes to contract and start a deformity; (5) a broad, flexible sole to enable the foot muscles to develop through exercise; (6) plenty of depth through the throat of the shoe.

ADULT SHOES

If a person has come through the baby and growing child stages with little foot trouble, great care should be taken through the adolescent period for this is the time of change not only in the feet but also throughout the whole body. The foot may fill out or change its contour and shoes may be outgrown in a month. Very few manufacturers have developed a shoe for this stage.

From this period on care must be paid to the fitting of the shoe not only as to length but also for general desirability as to pattern and last.

My method of checking shoes is to insist that my patients bring every new shoe to me before it is worn. After I am sure as to size, pattern, and so on, I then ask the patient to wear the shoe at home on the rugs for at least four hours to make sure that the last is right. We have all had the experience of buying a pair of shoes and finding that after they had been worn for a time the foot began to pain and draw in various parts. This was because the last was not right.

I can take four shoes of the same make, leather and size but of different last and fit them to a patient. On checking the fit seems to be perfect with all four but after a few hours' use one pair will be as comfortable as when first tried on while the others will cause pain and discomfort.

Following are the requirements my patient's shoes must meet before I will accept them:

1. Length. The shoe must be fitted with patient standing with weight upon both feet. All feet elongate when bearing weight, as can be proven by fluoroscopic examination of a foot within a shoe.

2. Straight inner line. The normal foot has a straight inner line and a shoe without this will cause the toes to be pulled out of line throwing strain upon the great toe joint.

3. Short heel measurement. I know of only one company which builds a shoe with this short heel measurement. This does away with the chance of the heel slipping. I find this is important in all cases where there is a rotation of the os calcis. All of my postoperative bunion cases are fitted in this type of shoe to be sure that no rotation can occur and throw strain upon the straightened joint.

4. Combination last. The heel of the shoe must be at least two sizes narrower than the ball measurement. This in conjunction with the short heel measurement insures a perfect fit around the heel and instep and does not allow any slipping or rubbing in the heel.

5. Snug instep fit with plenty of ball room. This keeps the foot from sliding forward and at the same time gives the metatarsal region a chance to spread normally and give the spring to the step. In cases of Morton's toe, or a dropping of the metatarsal region, a felt pad should be placed in the shoe after proper measurements have been made.

6. Have the ball of the great toe joint fall at the widest point of the shoe so that the leather molds smoothly around that portion of the foot. Short fitting is immediately noticeable but long fitting does not become apparent until after the shoe has been worn.

7. Have the shank of the shoe fit snugly under the arch of the foot. This shank should vary for different individuals and different occupations. There has been much discussion about shanks but I have found that every kind of shank from extremely flexible to extremely rigid may be used in the course of a year's time.

Flexible shoes exercise muscles more than do rigid shoes, while stiff or rigid shoes protect the feet more than do flexible ones. You ask, how much stronger will feet become in flexible shoes? They will become as much stronger as is necessary to compensate for loss of support previously enjoyed in stiff shoes. Feet will increase in strength up to the limits of their adaptability if they are forced by increased exertions in very flexible shoes, but dangers of strain increase as limits of adaptability are approached for development is sometimes forced too hard.

Feet may become harmfully overstrained in flexible shoes, although they permit the highest grade of muscular development. All people should wear as flexible shoes as their foot condition and occupation permit without undue strain. Strong feet may lose strength slowly under continued unfavorable circumstances, until they become so greatly weakened from so many years of abuse and inactivity that they can never regain normalcy.

Slight variations in standards of flexibility and rigidity from time to time may help feet to remain more easily adaptable than a single fixed standard used without change for years. Two slightly different pairs of shoes used alternately may not be as comfortable as a single pair used continually, but if the difference is not too great it is probable that the two pairs will keep the feet in good condition for a longer term of years.

Stiff soles are useful as the range of adaptability lessens in old age, obesity, in chronic joint diseases, in debility and in rheumatic states.

8. Heels. I feel that too much has been blamed on high heels. I have found too many cases that have become worse after some well meaning physician or shoe clerk has taken the individual who has worn high heels all of her adolescent and adult life, and put her into shoes with a three-fourths to one inch heel regardless of compensatory shortening of the various ligaments and tendons of the feet and legs.

High heels should never be worn by adolescent girls excepting at intervals, but if they have been worn until the tendons and ligaments have shortened so that the heel cannot come down without strain thrown upon the whole foot and leg structure the heel should be lowered gradually. In this case I fit the patient in a heel as low as she can comfortably wear without being conscious of strain in the foot and leg. I am not so much interested in the height of the heel as I am in the width of the base of the heel. The heel being built as broad as the counter of the shoe gives the surest footing. If found soon enough an individual can gradually be accustomed to a sensible heel height, but this will take at least a year's time, and at least three variations in height of the heel unless the patient wishes to undergo a tenotomy of the Achilles tendon.

Most authorities agree that for women the Cuban heel is a good general style and that the height may vary from three-fourths to one and three-fourths inches. Outside of my postoperative bunion cases I do not try to dictate the type of party shoe my patient should wear. An occasional evening in high heels will do no harm; and, I think, may be beneficial in that it changes the action of all foot, leg and back muscles.

9. Shoes for general service must be of the Oxford or tie type. If I had my way no pumps would be made as they cannot be made to fit properly. To be comfortable the pump must be too short.

10. Last, but not least, hose are very important, and can do as much harm as short shoes.

I feel that while we have made tremendous strides in the handling of the various conditions of the feet we have been very weak in the handling of foot clothing. Without the proper footwear the results of our work on the foot itself are lessened. I feel that our committee on shoes has started a very fine piece of investigation and education, but everyone doing foot work must study shoes as they have studied feet if we are to get the results we want and results are what count.

Case Histories

EXHAUSTION PSYCHOSIS

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Aug. 20, 1930. Patient, widow, age 59, admitted to ward in a very disturbed condition partially under the influence of a sedative. Brought from Monte Sano Hospital, where she became unmanageable. Under the drug she slept all night.

Aug. 21. Upon awakening was noisy, incoherent, disoriented, delusioned, and hallucinated. Refused to eat, said we were attempting to poison her. Resisted all attempts at nursing care, and became violent on slightest provocation. Examination (no history in family) revealed nothing except tenderness in the liver area, an undue irritation of the mucous membrane of mouth with sordes. There were several surface bruises about the body, but no open sores. The knee jerk reflex was diminished on both sides, as was the triceps and biceps—other reflexes were normal. The pupils were widely dilated, but reacted well to light and distance. Upper dorsal and cervical areas were as tense and tight as could be. Patient's whole appearance was that of dishevelment, with a frightened, bewildered and pursued expression. Laboratory work showed indican and acetone in urine, blood count normal. Blood chemistry not significant, Wassermann negative. No spinal puncture was done. From the family the following history was obtained. About three months ago was visiting in New York, and gradually noticed a nervousness. Doctor warned her that a breakdown was coming and to leave for home immediately. She did so and on the train became mildly hyperactive. In San Francisco was thrown from street car and rendered unconscious for a few hours. Patient complained to niece that in the east something "special" was put in her food which gave her stomach cramps, and she became temporarily partially paralyzed on left side. Three medical men had the case in succession. The last of these had her in a hospital in Los Angeles and gave her iron "shots." A spinal puncture was done, which seemed to set off a latent mania and since that time, has been fearful, with delusions of persecution, would not eat nor drink for fear of being poisoned. Dr. Brigham was called, because patient was getting no better, and family objected to the intensive drug therapy. She was transferred to Monte Sano, where Dr. Merrill was called in consultation and then she was transferred to Merrill Sanitarium.

Aug. 22. Put outside in yard for a short time, would cry, then scream at the top of her voice, and in her incoherence and disorientation would tear her clothing. Routine manipulative treatment begun, largely cervical and upper thoracic.

Aug. 24. Still noisy, imagining she is to be poisoned or shot, refuses to eat or drink. Nourishment forced.

Aug. 28. Patient up to this time had resisted all attempts at feeding. She was now in a semi-comatose condition markedly confusional. She was tube fed.

Aug. 29. Voluntarily took some milk and water. Slightly better. Seems to be responding to treatment.

Aug. 31. A quiet day—took nourishment willingly.

Sept. 2. Resistive again—forcibly fed. Resists all attention.

Sept. 6. Resistive and hard to handle, screeching at the top of her voice when being fed. A stool specimen at this time shows 100% putrefactive flora. Acidophilus therapy begun.

Sept. 19. Quite confused, but quiet, and responds to queries.

Sept. 22. Suddenly became very disturbed during supper hour, tore a casing from the wall and broke three windows, crying "they are going to hang me, and I am locked up in here."

Sept. 24. In yard for a short time—wants to escape.

Sept. 29. Again became disturbed, thinking some one was attempting to get in and kill her.

Oct. 1. Quite rational. "I don't remember a thing of my present illness, only that of fear and of being tired."

Oct. 2. Fell on the floor, and was found with her throat bloody. She had attempted to cut her throat with the lens from her spectacles. Later, weeping, said she was lonesome. Apparently she did not know what she had done.

Oct. 4. In early forenoon attempted to hang herself with a restraint strap from her bed.

Oct. 5. From now on patient steadily improved, cooperated well and seemingly was in good spirits.

Oct. 19, 1930. Discharged her to her niece in a perfectly rational and oriented condition.

May 25, 1931. To this date patient has had no return of her trouble and bears a most tolerant attitude toward it.

This case is particularly interesting, but not unusual. It is a case of exhaustion psychosis, of indeterminate origin. The patient had always been a hard worker, full of vivacity. It demonstrates a few of the problems arising in the hospitalization and treatment of such cases. It is interesting that it was not until the patient received osteopathic care that she began to respond to treatment. The characteristic points are the complete confusion and disorientation—a quiescence of conscious life and the domination of a few submerged ideas. The complete return to normality occurs most often in these cases, but, as a rule, it is a process of months. We feel that application of osteopathic principles saved this woman a long period in a psychotic state.

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Special Articles

CLINICAL ASPECTS OF RAISED KIDNEY THRESHOLD*

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In developing my subject we will divide this great field of kidney study and treat only that phase of kidney physiology that is practical for us to consider as general physicians. We will not attempt to go into the various theories, beyond simply referring to them, as to how the kidney does its work. We are not discussing any theory concerning the presence of an internal secretion of the kidney. It is not our intention to discuss the intricate tests that may be used in the study of kidney function but to bring before you those simple tests by which a physician engaged in general practice may come to an understanding of just what a patient's kidneys are doing and can do or can perhaps be made to do under proper treatment.

We must consider a kidney much as you would a threshold in a doorway. If the floor on one side is flooded with water, when that water reaches the level of the threshold it runs out into the next room. If the water contains substances in solution or in perfect suspension they will run out as the water runs out. If you raise the threshold a little, you cause a retention of water and the substances it carries. Now, where the threshold in the door controls the depth or amount of fluid—all parts alike on either side of the threshold—the kidney seems to have a different threshold height for each of the chemical substances with which it has to do.

One of the puzzling functions of the kidney is its maintenance of the optimum concentration of salts and other substances in the blood, and its equally puzzling power of concentrating the various substances secreted or excreted by it in the urine to many times their blood concentration. For instance, normally we expect the kidney to be able to concentrate urea in the urine to 80 times its blood concentration, uric acid 20 times and creatinine 100 times.

Just how the kidney maintains and governs this optimum concentration is a bit difficult to understand. In this paper we will not attempt to go into that further than to call attention to the fact that the normal kidney will take out of the blood all chlorides in excess of certain amounts, all urea, all sugar, and all water in excess of their respective amounts and percentages. A kidney seems to have a separate threshold for each of these substances. When that threshold is raised, blood

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retention and body retention of those substances takes place.

We have edema when the water threshold is raised. We have gout with raised uric acid threshold. We have many other abnormal conditions present in accordance with raised kidney threshold as regards these other endogenous and exogenous products.

In examining kidneys our questions are: How much work are the kidneys doing; and, how much work can they do?

The urine tells us what is being excreted by the kidneys. The blood tells us what substances and how much of them are being left behind in the blood stream. Offhand that sounds simple enough. But is it? You might find a normal amount of urea on both sides of an abnormal kidney. Then you must ascertain the answer to the second question: How much work *can* these kidneys do?

Here is where the tests of function come in. There are dozens of good ones, but for the general physician there are really only a few that need to be made in order to come to an understanding of just how good or how bad the case is.

When a patient comes to me presenting symptoms suggestive of kidney retention my first move is to order a three-ounce specimen of urine on arising the following morning. If the patient admits getting up during the night, I ask for a specimen from each voidance between 3 a. m. and arising. This (or one of these) specimens should be dark, with fairly good specific gravity. I do a complete urinalysis. This is for record.

The next test in order should be to ascertain how low and how high a concentration the kidneys are able to make. The most simple test for this is to have the patient drink about a quart of water in the morning. Do not give him anything else to eat or drink. At hourly intervals have him empty the bladder. Keep each voided specimen separate through a period of four hours or longer if possible. The specific gravity of these specimens should go from low to high. The early voidance should test as low as 1.005, the late ones over 1.020. From the above test you know how elastic the kidney is.

Our next test is to see actually how much work the kidney is leaving undone. This is the blood test. Inasmuch as considerable chemistry and apparatus is required to make chemical analysis of the blood, perhaps this test should be done by a regular laboratory properly equipped for it. (Let me inject here a thought. If your patient is in middle age or beyond and if there has not been a blood sugar test made, it is a good idea to suggest that he pay the slight additional fee and have that test run also. Many a case of incipient diabetes is caught in this way.)

The most valuable single blood test for renal function is the determination of blood-urea nitrogen. The generally accepted normal figures are from 12 to 15 mgs. per 100 c.c. That is approximately 50% of the total nonprotein nitrogen.

Simultaneous with the blood urea nitrogen determination, the urea content of the urine must be ascertained.

A high blood concentration of urea nitrogen with a low urine concentration can mean but one thing—lowered kidney function. A high blood-urea nitrogen with a high urine concentration means trouble elsewhere. A low blood-urea nitrogen with a corresponding low urine concentration means that under present diet conditions there is no backing up of urea in the blood but it does not mean that all is well with the kidney. You must still measure the potential power of the kidney. This is best done by MacLean's Urea Concentration Test. This test is made as follows:

UREA CONCENTRATION TEST

In order to prevent diuresis you should advise your patient to take as little fluid as possible for 12 hours prior to the test. The test is best given in the morning and the patient should come after having taken only the lightest breakfast, with not more than one glass of water. No other fluid should be taken. The patient empties the bladder completely and immediately thereafter drinks 100 c.c. of water in which has been dissolved 15 grams of urea. The bladder is emptied one hour later and a second hour later and the percentage of urea voided is estimated. For practical clinical purposes, perhaps only the voidance at the second hour need be utilized. Should you get a percentage of urea above two, with that specimen, it is unnecessary that you run the first hour specimen as the kidneys will be considered as fairly efficient. The higher the percentage or concentration, the more efficient the kidneys are. Occasionally a frank diuresis follows ingestion of the urea and the test will have to be repeated on another day. Should that be necessary you should then test the third hour voidance, possibly fourth hour voidance in case of a repetition of the diuresis. The estimation of the urine urea is most easily arrived at by use of the sodium hypobromite method described later.

It is always well to be doubly sure. Therefore, you should not close your diagnostic efforts without doing the phenolsulphonphthalein or "red" test. This is a simple test also and it will make an admirable check for the preceding findings.

PHENOLSULPHONPHTHALEIN TEST

The technic of this test is as follows: If your patient is to be tested at 9 o'clock in the morning you may allow a light breakfast to be taken not later than 7:30. At breakfast he may drink a glass of milk or water but should not have coffee or tea. Thirty minutes before starting the test, he is instructed to drink six to eight ounces of water.

The dye used can be obtained in ampoules from Hynson, Westcott & Dunning. They provide 1 c.c. ampoules of phenolsulphonphthalein of exactly the proper solution. With sterilized hypodermic 1¼ inch needle you inject exactly 1 c.c. of the dye deep into the lumbar muscles between the crest of the ilium and the spine. Immediately before injecting, have the patient empty the bladder. Of course, strict aseptic principles must be most carefully observed. Allow ten minutes for the absorption of the dye by the blood stream. One hour subsequent to this, or an hour and ten minutes after the injection, the patient empties the bladder. This specimen is labeled No. 1 and set aside for test. Exactly one hour later, or two hours and ten minutes following the injection, the bladder is again emptied and all of that specimen set aside for test, labeled No. 2.

All of the urine voided the first hour is placed in a 1,000 c.c. volumetric flask to which is added 10 c.c. of 10% sodium hydroxide solution. Add tap water to make 1,000 c.c. thoroughly mixing the solution while diluting it. Then, using the Dunning colorimeter, likewise obtained from Hynson, Westcott & Dunning, through a comparison of the solution you have obtained with standardized ampoules you can arrive at the percentage of the dye excreted by the kidneys during that time. The test is repeated in the second hour specimen.

In normal kidneys the first hour generally shows 40% to 60% excreted; the second hour generally shows 20% to 25% excreted; or a total in the two hours of 60% to 85%.

If the first and second hour determinations are practically the same, the patient should have shown a lessened range of specific gravity in the test for kidney elasticity. Likewise, a low phenolsulphonphthalein test would be rather expected in a raised blood-urea nitrogen with low urea percentage in urine.

A FEW FURTHER OBSERVATIONS

If you should make the "red" test on all of your patients who come into your office, "just complaining," you would be astonished at your findings. We have found that invariably when a patient comes in and says he has been "doctoring" without result, and the doctors cannot find anything wrong, he is inclined to be aching in various parts, complaining of loss of ambition and pep, does not care what happens, etc. When we ask for urine he says he has had it tested many times and nothing wrong was found. When we do a "red" test we usually find that the patient's kidneys do not eliminate more than one-half to two-thirds as much as they should in two hours.

If that patient is given osteopathic manipulation 10 to 20 times in the splanchnic region of the spine, and then complains that he is too well to keep coming, another "red" test will show a pick-up almost to normal. His body excretion has been improved 50% to 100%.

Osteopathic physicians can do that. The M.D. cannot. I am inclined to think that many of our patients who come complaining and without something specific

upon which to fasten a diagnosis, are really patients with raised kidney threshold, and that our general toning treatments lower that threshold to normal. Perhaps this is one of the real reasons why osteopathic treatment slows up the approach of old age.

What happens when we treat the splanchnics in these kidney cases? Physiologists are still undecided as to just how the kidney does its work and as to just what factors can or do control its power of concentration. Among other theories is that advanced by Richard that the glomerular process is one of filtration, and that the intraglomerular pressure (or filtration pressure) is regulated by the relative degree of constriction and dilatation of the afferent and efferent blood vessels. If this is so, the vasomotor control of the kidney vessels should certainly affect the level of the threshold. We might advance the theory then that the improvement of these raised threshold cases is due to the normalizing effect our splanchnic treatment may have on the vasomotors of the kidney vessels.

SUMMARY

(a) In making a thorough study of the kidney function the following tests should be made:
(1) Routine urinalysis should be done for record;
(2) Kidney elasticity test made;
(3) Urea-nitrogen concentration in blood determined;
(4) Simultaneous urea in urine determined;
(5) MacLean's urea concentration test made;
(6) Phenolsulphonphthalein test made.

From the results obtained by such tests you should be able to learn just what the kidneys *are* doing and just what they are *capable* of doing. Remember that high blood-urea nitrogen plus low urine urea means lowered kidney function; that high blood-urea nitrogen plus high urine urea means trouble elsewhere; low blood-urea nitrogen plus normal urine urea means nothing unless you get a plus 2% urea in the urine from MacLean's urea concentration test.

(b) By making a simple test such as the "red" test on many of the patients who are thus found to be retention cases, then giving thorough osteopathic treatment to the splanchnic region, subsequent test usually shows great functional improvement in the kidneys that is accompanied by apparent return to normal feeling on the part of the patient. Therefore, we believe that the renal threshold can be substantially lowered by osteopathic treatment properly applied.

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NEWER IDEAS ON DIET*

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The importance of diet was given a tremendous impetus with the discovery of vitamins, and just now, aside from vitamins, the interest seems to be centering in the mineral content of the food intake, and the maintenance of the normal acid-alkaline balance of the body fluids and tissues.

The practical results of the newer dietary understanding were shown in the Byrd exposition to the antarctic, in which the findings of McCollum, Lewis and Rowe were followed, eliminating practically all guesswork, and providing a balanced protective ration, ample in calories, vitamins, minerals, proteins, carbohydrates, fats and roughage, so that from the dietetic standpoint the Byrd exposition stands out over all other such expeditions as having more adequately protected the health of the men under the trying polar conditions.

The vitamins are still attracting much interest, research has added to our knowledge of vitamins, new vitamins have been discovered, and it is quite likely that even additional vitamins will be identified. The vitamins are manufactured by plants and appropriated by animals and passed on from one animal to another as food.

Recent studies have been those elaborating the importance in nutrition and protection of vitamin A, and the determination of sources of supply. Vitamin A is antixerophthalmic, antiophthalmic and anti-infective. It is essential for growth, well-being at all ages, and successful reproduction. A deficient supply of this vitamin leads to weakening of the body tissues and increased susceptibility to bacterial infection, particularly of the epithelial tissues. Long-time feeding experiments conducted on rats have shown progressively increasing benefits throughout succeeding generations in the continued use of liberal amounts of vitamin A.

Milk and dairy products, eggs, liver, and leafy vegetables are among the richest sources of vitamin A.

In a study by Crist and Dye, it was determined that positive relations existed between chlorophyll development and vitamin A content of food, showing that the more chlorophyll it contained, the higher was the vitamin content, vitamin A content varying more or less directly with the greenness of the plant tissue.

Leaf lettuce is more efficient than head lettuce in the promotion of growth. The outside green leaves of head lettuce are superior to the inside yellow leaves in furnishing vitamin A.

Gilligan and Blumgart report the favorable response of osteomalacia to the feeding of cod liver oil concentrate containing large amounts of vitamins A and D, and still more marked improvement when ultraviolet irradiation was added to the treatment. This caused deposits of considerable amounts of calcium and phosphorus, together with increased density in the bones and striking clinical improvement. The evidence was that osteomalacia is a form of adult rickets.

Vitamin B, formerly thought to be an entity, described as water-soluble B, has been found to be a complex vitamin, having at least two determinable components, designated as B_1 and B_2, or vitamins F and G, while Crist and Dye give a third constituent designated as B_3. Vitamin F or B_1 is antineuritic and essential for the prevention of polyneuritis and quite likely beriberi. Vitamin B_1 is heat-labile.

Vitamin G or B_2 is known as the "antipellagric" vitamin. Vitamin G is heat-stable. It is a factor in growth and its deficiency over several weeks is followed by soreness of the eyes and mouth. Cereal grains are rich in vitamin F and poor in vitamin G. Milk and the green, leafy vegetables are the best sources of both vitamins F and G.

The influence of vitamin B deficiency on carbohydrate metabolism was studied by Sure and Smith, who found that with a vitamin B deficiency a marked hypoglycemia occurred before loss of weight was evident. There also developed anhydremia and disturbance in the hematopoietic function. Vitamin B feeding after the establishment of deficiency produced rapid increase in the concentration of blood sugar and in the regeneration of blood in the rat.

The experiments of Reader point to the evidence that the third accessory "B" factor is essential for continued growth in rats.

Vitamin C is the antiscorbutic vitamin, its absence leading to scurvy, this disease being characterized by soreness and stiffness of the joints, tendency to hemorrhage, soreness of the gums, and loosening of the teeth. When deprived of vitamin C children become irritable and will show subnormal resistance to infectious diseases. The best sources of vitamin C are the citrous fruits, raw cabbage, turnips, and tomatoes. The capacity of the body to store vitamin C is very limited, and it should therefore be amply provided for in the diet.

Vitamin D is antirachitic. It is found in liver and egg yolk, which are the richest sources. Milk and dairy products contain it in small but appreciable amounts. Cod liver oil carries both vitamins A and D.

Egg yolks produced in the spring have a higher content of vitamin D than yolks produced in the fall and winter.

Vitamin E is essential for reproduction. It is found in the oil of wheat germ as one of the richest sources. Another rich source is fresh, green lettuce. Milk and butter fat contain it in small amounts.

The peculiar relationship to reproduction in vitamin A and vitamin E is that lack of vitamin A causes failure in ovulation. In the absence of vitamin E ovulation takes

*Read before the Diet Section, A.O.A. Convention, Seattle, 1931.

place, but there is failure of placental function, with death and resorption of the developing young.

The studies of Mellanby of Sheffield, England, showed that vitamin A raised the resistance of puppies to infections of the lungs, quite independent of vitamin D, which has to do with the bones rather than mucous surfaces, broncho-pneumonia being common among the experimental puppies. He found that when rats were fed all other dietetic factors so far known except vitamin A, they invariably died of some infective condition.

Mellanby also reports the evident influence of vitamin A as preventive in puerperal septicemia, in raising the resistance of persons suffering from this infection.

Vitamin A he also shows to have a protective influence against degeneration in the nervous system. Some dogs on which he experimented had ergot and vitamin D added to the diet, and typical degenerative changes in the spinal cord were produced so long as the diet was devoid of fat-soluble vitamins, but if these were present in sufficient quantity no change in the spinal cord was found. However, when butter or cabbage or egg yolk was added to the ergot-containing diet, no degenerative changes in the spinal cord were found. These observations indicated that vitamin A was the protective dietetic factor.

Hoff has shown that vitamin D increases the tolerance for mineral poisons. It evidently increases the resistance of the cell membrane, causing the cell to be shut off from the substances which injure the cell.

The Journal of the A. M. A. editorially emphasizes the distinction between the retention of calcium under favorable dietary conditions and the mobilization of lime produced by vitamin D as worthy of special study and consideration. Vitamin D as a calcium-mobilizing factor is not a substitute for calcium, and the retention of calcium depends on the amount of that element in the food, and must be provided for in the intake.

The whole question of vitamins is still the subject of much investigation. The evidence for the present shows that in a diet rich in milk and dairy products, eggs, liver and leafy vegetables, whole grains and raw, ripe fruits, with plenty of greens, lettuce, cabbage, turnips, carrots and tomatoes, all of the vitamin requirements of the body will be met. Not more than a day or two should pass without adequate dietetic provision being made for each of the known vitamins.

Studies of the mineral elements of food have brought forth some very interesting and practical observations, particularly with respect to calcium, phosphorus, magnesium, iron, copper, aluminum, manganese, iodine, sodium and potassium content.

The summary of the paper by McHargue, investigating the significance of the occurrence of copper, zinc and manganese in forage crops and foods, is as follows: "Fertile soils contain small amounts of the elements copper, manganese and zinc. Plants grown in the soil absorb small amounts of these elements which are stored in the leaves and in the pericarps and germs of the seeds. When corn, wheat and rice are highly milled, the resulting degermed corn meal, patent flour, and polished rice are deprived of the greater part of the compounds of copper, iron, manganese, and zinc, which appear to be factors in animal nutrition.

Hellwig and Quam found that the copper content of liver was the highest of any of the edible tissues of the body.

Manganese is apparently an essential soil ingredient for the production of chlorophyll, and chlorophyll is the basis for the production of food from the soil for human consumption. "As to the functions of these elements in the growth of plants it can be said that manganese is apparently concerned in the synthesis of chlorophyll because when this element is carefully excluded from sand cultures containing adequate amounts of available manganese-free compounds of the ten essential elements, plants grow until the nutrients contained in the seeds are exhausted, become chlorotic and finally die, but when manganese is added, all other conditions being identical, the plants grow in a more normal way and do not become chlorotic.

"When the chlorotic leaves are analyzed they show a normal content of iron and a very marked diminution in the manganese content when compared with the results of analyses of leaves of plants grown in sand cultures to which manganese has been added."

"Rats confined to a synthetic diet and under conditions that were the best that could be improvised at the time, gave results which the author interprets as indicating that compounds of manganese more definitely and possibly copper and zinc also have important biological functions in animal metabolism. Moreover it is assumed that the compounds of these elements as they occur in the natural state in green leaves, and seeds of mature plants and the vital organs of animals have a much more active biological potency than could be expected from feeding equal proportions of crystalline salts of these metals in a synthetic diet."

Bliss of Tulane University ventures the suggestion that pellagra is in reality an iron-deficiency disease. He points to anemia as a frequent concomitant of pellagra. He also notes that the foods which are supposed to contain liberal quantities of vitamin G (beef, egg yolk, yeast) are all iron-containing foods (some of them being among those containing more iron than any other known biologic product), while the pellagra-producing diet of poor farmers of the South (molasses and corn bread) is extremely poor in iron.

The mineral element copper has a specific function in conjunction with iron in building the hemoglobin of the blood. Copper has not been reported in the composition of hemoglobin, but seems to be necessary as a sort of catalytic agent in the building of hemoglobin.

Warner points out that there is a deficiency of calcium in chorea.

The influence of iodine in preventing goiter has attracted considerable attention. It is interesting in this connection to note that in milk from cows which feed in pastures close to the sea the iodine content is from 300 to 800% higher than the iodine content of milk from cows fed in pastures in southern Bavaria and in Switzerland where goiter is endemic.

A most interesting series of studies in nutrition have been carried on by Dr. Harold F. Hawkins, a personal friend of mine, at the University of Southern California, with reference to the control of caries and pyorrhea by regulation of the food intake. Not only have the studies been of value in showing the relationship of the mineral balance in metabolism to caries and pyorrhea, but to cases of rickets, pulmonary tuberculosis, gall bladder infection, sinus infection, general resistance to infectious diseases and other conditions, showing that in a large measure the general welfare of the individual is dependent upon the calcium-phosphorus balance and the acid-base balance, as indicated by the p^H of body fluids, secretions and excretions. These studies reveal with reference to the relationship of calcium and phosphorus, that caries is present when the saliva carries a low calcium and a high phosphorus content, when the blood carries a high calcium and a low phosphorus content, when the urine carries a high calcium and a low phosphorus content. Whenever calcium is high in a body fluid, the phosphorus is low, and when the phosphorus is high, calcium is low.

Pyorrhea develops under conditions the reverse of those given for caries; that is, when the calcium in the saliva is high and the phosphorus is low, when the calcium in the blood is low, and the phosphorus is high, when the calcium in the urine is low and the phosphorus is high.

Quoting from a summary by Dr. Hawkins: "Caries exhibits in the blood stream a faulty balance between calcium and phosphorus, in which we see a high blood calcium and a low blood phosphorus. The phosphates are not only low but deficient in dibasic salts. It reflects itself in the saliva by an acid reaction and low calcium, and in the urine by an alkaline urine and a high calcium. Systemic pyorrhea likewise exhibits a faulty balance between calcium and phosphorus. The blood picture is a low calcium and a high phosphorus, just the reverse of caries. The excessive phosphates are usually deficient in dibasic salts but not to as marked a degree as in caries. It reflects itself in the saliva usually by a moderately acid to neutral saliva, the calcium being usually excessive. In the urine the reaction is very acid and the calcium loss is low."

Other comparatively recent studies emphasize clearly the importance of maintaining a preponderance of alkaline-ash foods as against the acid-ash foods in promoting health

and efficiency. The substitution of an alkaline-ash diet for the too common acid-ash diet which the patient has been using, provides most marked clinical changes in many instances where there is an acidosis of the mineral ash type.

Where the indications point to an acidosis of the suboxidation type, the reduction of the total calories, and particularly the calories supplied by carbon, either in the form of carbohydrates or fats and oils is necessary to help balance the oxidation processes.

Alkaline ash in organic form has served its purpose clinically better than in inorganic form. Foods which carry the bases in largest amount and in the order of their value in providing alkaline ash are as follows: dried lima beans, dried beans, raisins, almonds, beets, carrots, muskmelon, chestnuts, lettuce, potatoes, dried peas, dried currants, oranges, bananas, lemons, cauliflower, peaches, cabbage, apples, radishes, turnips, cow's milk, asparagus.

Foods which carry an acid ash and their relative strength in acid ash elements are as follows: oysters, egg yolk, chicken, fish, rabbit, lean beef, veal, oatmeal, lean pork, eggs, frog meat, rice, crackers, whole wheat bread, white bread, dried sweet corn, egg white, peanuts.

No one protein contains all of the necessary amino-acids for the needs of the body. For this reason it is necessary to provide a variety of proteins. For instance, wheat protein is deficient in the amino-acid, lysin, but protein of peas and beans furnishes a large amount, so that peas and beans supplement wheat. With milk or meat as supplemental to a cereal or vegetable diet, provision for all of the needed amino-acids is insured.

With reference to amino-acids, Sherman concludes the chapter on proteins in his new book with this paragraph:

"It is plain that the mixtures of proteins contained in different articles of food as we eat them do not differ in such a striking way as do the individual proteins when isolated and fed singly; but neither is it true that the proteins of different articles of food are equivalent for all practical purposes. Hart, McCollum, and their associates have shown that the natural protein mixture of milk is much more efficient than an equal weight of the mixed proteins of grain both for the support of growth and as food for the production of milk in dairy cattle. While it is always possible that in comparisons between natural food materials the results *may* be influenced by differences in the unknown food constituents which may be present, yet in the cases here cited there is ample ground for confidence that the differing efficiencies ascribed to milk and grain proteins are mainly due to the same differences of chemical constitution, i. e., 'amino-acid make up,' to which are attributable the striking results obtained in the experiments in which isolated foodstuffs were fed. . . . This is made all the more certain by the fact that subsequent experiments by Steenbock and Hart have demonstrated that the protein mixture of a properly proportioned ration of grain and milk may show high nutritive efficiency, doubtless due to the fact that the milk proteins are rich in lysine and tryptophane, which are the amino-acids most needed to supplement the proteins of the grains and thus increase their nutritive efficiency. These findings show the importance of a diversified source of protein, so that all of the amino-acids required for adequate nutrition may be present in the intake."

It is a question whether vegetable proteins are as easily digested as those from an animal source. It is probable that if the cell wall is sufficiently fractured the digestive ferments may enter the vegetable cell and make as good use of vegetable protein as of animal. However, under ordinary cooking, mastication and digestion, many vegetable cells are not ruptured, leaving the contents inaccessible to the digestive fluids.

Food combinations are still the subject of interest and investigation, although this phase of dietetic research has been overshadowed by the detailed work on the vitamins, mineral salts and the acid-base equilibrium.

"The claim has been made that carbohydrates and proteins should not be eaten at the same meal and yet every vegetable and every fruit contains a mixture of these. In the stomach the presence of some protein may aid the digestion of starch, because the hydrochloric acid combines with protein and does not so readily acidify the mixture of carbohydrates and alkaline saliva and thus stop digestion by ptyalin. While proteins largely repair the waste of the body, carbohydrates and fats supply the heat and energy. Carbohydrates are also necessary to aid the burning or utilization of fat. Experiments indicate that 1 gm. of glucose is necessary for 1.5 gm. of fat. A fat free diet, according to Burr, produces a train of symptoms suggesting a deficiency disease."

Some of the most important food combinations to avoid are the eating of much acid fruit with starch, the use of milk and fish, acid fruits with beans, or several high protein foods at the same meal.

The order in the meal is also of importance, the clinical evidence pointing particularly to the fact that beginning a meal in which there are cereals or other starches with an acid fruit is to be discouraged. Whatever acid fruit is used should be taken at the close of the meal, to supplement the normal hydrochloric acid of the stomach rather than to substitute the citrous acids for gastric juice acid, as in a measure occurs when the citrous acids are taken first.

It is of biologic as well as economic advantage to make each meal of few foods, ordinarily not exceeding three or four, and have the variety between meals rather than a great variety at any one meal.

The finer foods are ground, either by mastication or mechanical grinding, the more easily digested and more nutritive they are. Experiments conducted at the New Jersey Agricultural Experiment Station showed that with animals ground feed was 17½% more efficient than unground materials of the same chemical composition.

We hear a great deal of the influence of sunlight in its action, and this undoubtedly enables the body to utilize materials that are present which otherwise would not be available, but exposure of the body to sunlight or other means of irradiation will not replace foods which have been produced directly or indirectly by sunlight, and carry the radiations of the sun stored in them.

The information available about diet, food values, foods as protective and preventive factors in disease, food deficiencies, relative proportions of various elements, and improved knowledge of sources of supply are all tending to clarify the field of dietetics so that the proper prescription for foods becomes increasingly more important and dependable as a part of any therapy. The greater the care exercised in making such prescriptions, basing them on an adequate knowledge of the findings of the laboratories, the more serviceable and satisfying both to patient and physician the results in actual practice.

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A CLASSIFICATION OF RHEUMATISM BASED ON SYMPTOMATOLOGY

I. Acute Joint Affections.
   (a) Acute rheumatism (polyarthritis acuta).
   (b) Acute rheumatoids as sequellæ of known infections (sepsis, scarlet fever, typhoid, grippe, gonorrhea, lues, etc.).

II. Chronic Joint Affections.
   (a) Chronic rheumatism (polyarthritis chronica). Primary and secondary forms.
   (b) Arthrosis deformans (arthropathia).
   (c) Chronic spine affections (spondylosis deformans and spondylarthritis anchylopoietica).
   (d) Joint affections of the rare forms (neurogenous, hemophilic, endocrine, psoriatic, alkaptonuric or Perthes, Köhler, Schlatter type).

III. Other Affections of the Bones, Tendons, Tendon Sheaths and Bursæ, Fasciæ and Ligaments.

IV. Muscular Rheumatism and Inflammations (Myalgia and Myositis).

V. Neuralgias.
   (a) Sciatica.
   (b) Other neuralgias.

Gudzent, Friederich: Recent Results of Research in Gout and Rheumatism, *Jour. Egyptian Med. Assn.*, 15:472-489 (Aug.) 1932. Abstracted in the *Internat. Med. Dig.*, 21: 272-275 (Nov.) 1932.

Osteopathy

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(Revised by the Author)

Leaflet of a series on college counseling and advising for the professions; what the occupations are; what preliminary education is required; where professional training is offered; length of training; student budgets; and selected references. The series is designed for the use of high school and college students, orientation classes, guidance committees, counselors, teachers, and parents.

[*This booklet is obtainable from the American Osteopathic Association.—Ed.*

Osteopathy as a Career.—Osteopathy is a system of treatment based on the theory that diseases are chiefly due to deranged mechanism of the bones, nerves, blood vessels and other tissues, and can be remedied by therapeutics majoring in manipulations of these parts. Osteopathy is the outgrowth of two theories: (1) that the normal living body makes its own remedies to combat any infection which may attack it, and (2) the body is a machine, which can make and distribute these remedies to the best advantage only when it is in correct adjustment. Its treatment is largely manipulative, although it teaches and applies surgery, use of drugs, electrical devices, etc. As a healing art it has had legal recognition since 1896, when Vermont first passed a law legalizing the practice; all States now regulate the practice of osteopathy.

The beginnings of osteopathy date from its founder, Dr. Andrew Taylor Still (born 1828), who in 1892 opened at Kirksville, Mo., a school "to improve our system of surgery, midwifery and treatment of general diseases . . . the adjustment of the bones is the leading feature of this school." This course covered 20 months, was extended in 1904 to three years, and again in 1916 to four years. Present-day procedures in osteopathic colleges are vastly different from what they were 30 years ago. Gradually there has been introduced in the teachings such therapeutic procedures as are used by medical science, i. e., surgery, drugs, vaccines, serums, diet, etc. The approved colleges, six in number, teach the use of vaccines and antitoxins and some teach pharmacology or limited materia medica. They aim to cover the medical field with the exception of materia medica, for which they substitute osteopathic technic. Twelve states license graduates permitting them to practice osteopathy "as taught" in recognized osteopathic colleges. Since the colleges teach in addition to manipulation, surgery and the properties of drugs, licensed graduates in 34 states are entitled to use these therapeutic agents in their practice. Professional and educational standards of osteopathy have been raised recently and doubtless will be further raised.

Census.—The 1930 census accounts for 6,117 osteopaths in the United States, of whom 1,563 are women. The 1932 year book of the American Osteopathic Association lists 8,169 osteopathic physicians not including 7 in Hawaii, and Puerto Rico; this represents an increase over 1930 figures of 525 names; the principal gains occurred in Pennsylvania, Ohio, California, Misscuri, Kansas and Iowa. The majority of osteopathic physicians are located in California, Missouri, Pennsylvania, Illinois, Ohio, Iowa, Michigan, New York, Massachusetts, and Kansas. There are almost twice as many practitioners in California as in any other state. In the United States there is one osteopath to every 20 doctors of medicine, and one per 17,000 of population.

Compensation.—Various estimates for osteopaths in small communities have ranged from $2,000 to $5,000 per year. There is little data on the income of osteopaths. The Committee on the Costs of Medical Care obtained data on the incomes of 59 osteopathic physicians in Philadelphia in 1928 which averaged $5,847 (gross income); 7 in San Joaquin County, California, in 1929 averaged $7,940 (gross income); and 11 in Vermont in 1929 averaged $6,069 (gross income). Gross income, not to be confused with net income, means receipts before expenses are deducted.

License to Practice Osteopathy.—A student upon graduation from an osteopathic college is required to take State Board licensing examinations to practice osteopathy in the State of his choice. The licensing examinations are given in 28 States by the State Board of Osteopathic Examiners; in other States by the Medical Examining Boards, fourteen of which provide osteopathic representatives. While 10 States and the District of Columbia give licenses granting all privileges of physicians and surgeons to osteopathic physicians, in 15 states the use of major surgery is not included, and 14 States do not permit the prescription or administration of drugs by osteopaths.

Training.—There are six osteopathic colleges operating in the United States which have been approved as meeting the requirements of the American Osteopathic Association. While there are other schools teaching osteopathy many states require that graduates come from recognized colleges. Training varies slightly in these approved schools and two offer preosteopathic work of one year for students not able to meet college entrance requirements. Every state requires high school graduation as a prerequisite for entrance to the osteopathic colleges; where this requirement is not specifically mentioned in some states it is implied by the fact that students must graduate from approved colleges, and these colleges require high school graduation for entrance. If the candidate intends to practice in Indiana, Virginia, District of Columbia, Idaho (1934) or New York (1935) he should present two years of college training with specific preosteopathic subjects before entering an osteopathic college. If he intends to practice in Kentucky, New Hampshire, or Texas, he must present two years training in an accredited liberal arts college. If he intends to practice in California, Connecticut, or Pennsylvania, he must have one year of college training in physics, chemistry, and biology.

COLLEGES OF OSTEOPATHY

APPROVED BY THE AMERICAN OSTEOPATHIC ASSOCIATION

	Tuition 1st yr.	Fees	Board and Room	Enrollments 1931-32	Degrees (D.O.) 1931
CALIFORNIA					
College of Osteopathic Physicians and Surgeons, Los Angeles[1]	$255	$10	$360	368	41
ILLINOIS					
Chicago College of Osteopathy, Chicago	210	51	450	106	18
IOWA					
Des Moines Still College of Osteopathy, Des Moines	250	—	360	199	56
MISSOURI					
Kansas City College of Osteopathy, and Surgery, Kansas City	175	37	360	143	21
Kirksville College of Osteopathy and Surgery, Kirksville	150	51	222	602	185
PENNSYLVANIA					
Philadelphia College of Osteopathy, Philadelphia	370	—	360	416	71
Totals				1834	392
Averages	$225	$25	$352		

[1] Also offers one preosteopathic college year for students who have not met the college entrance requirements.

Time Required for Professional Training.—For graduation a student must cover 4 years (36 weeks each) of training in a recognized college which offers about 4,422 hours

according to the standard curriculum of the American Osteopathic Association. Some states require additional training in surgery and internship.

The Course of Study.—Unlike medical colleges, the osteopathic colleges teach only limited materia medica, but substitute principles of osteopathy. Pharmacology is taught in some of the colleges, and medical therapeutics is replaced by osteopathic therapeutics, while the practice of medicine is replaced by the practice of osteopathy according to the osteopathic viewpoint. In general the first two years of work cover the basic sciences which include anatomy (descriptive, histology, embryology, dissection), physiology, chemistry, pathology and bacteriology, supplementary therapeutics (toxicology, pharmacology, anesthesia, narcotics, antiseptics), biological therapeutics (vaccines, serums, antitoxins, etc.)

The last two years cover hygiene and sanitation, practice of osteopathy, surgery, obstetrics, gynecology, etc., and include eye, ear, nose and throat, nervous and mental diseases, public health etc.

Upon graduation the Doctor of Osteopathy degree is conferred. Candidates must be 21 years of age, and have given a minimum number of osteopathic treatments.

Student Expenses.—Tuition averages $235 in the six osteopathic colleges and $25 (average) is collected in fees. Board and room is estimated at $352, and varies from $222 to $450 according to the school and location. Books may cost about $50 annually. Other personal expenses which vary with individual taste and pocketbooks should be added.

AMERICAN OSTEOPATHIC ASSOCIATION

The American Osteopathic Association, 430 North Michigan Avenue, Chicago, Ill., was established to promote the interests and influence of the science of osteopathy and of the osteopathic profession by stimulating research, elevating the standards of osteopathic education and advancing osteopathic knowledge, etc. The association is a federation of divisional societies organized within the states. Members shall be graduates of recognized colleges of osteopathy, and licensed practitioners. It publishes a code of ethics, a year book, and a journal.

STATE REQUIREMENTS FOR LICENSE OF OSTEOPATHIC PHYSICIANS

	No. of Osteopaths in U. S. 1932	Educational Requirements		Nature of Board of Examiners:				Scope of Practice:				
								Does not include		Includes		
		Preliminary (HS—High School)	Professional (Osteo. College)	Osteopathic Board	Medical Bd. with Osteo. Examiner	Medical Board	Basic Science Board	Surgery	Drugs	Surgery	Obstetrics	As taught in Osteopathic Colleges
Alabama	6	HS	4 yrs.			x		x	x			*
Arizona	16	HS	4 yrs.		x			no restrictions				
Arkansas	34	HS	4 yrs.	x			x		x	*	x	
California	1194	HS-1 col.	4 yrs.	x				unlimited				
Colorado	144	HS	4 yrs.		x			unlimited				
Connecticut	73	HS-1 col.	4 yrs.	x			x	x				*
Delaware	8	HS	4 yrs.			x		unlimited				
District of Columbia	35	HS-2 col.	4 yrs.		x		x	same as M. D.				
Florida	138	HS	4 yrs.	x								x
Georgia	52	HS	4 yrs.	x								x
Idaho	46	HS-2 col. (1934)	3 yrs.	x				x				
Illinois	552	HS	4 yrs.			x*		x	x		*	
Indiana	144	HS-2 col.	4 yrs.		x					x	x	
Iowa	390	HS	4 yrs.	x						x	x	
Kansas	325	HS	4 yrs.	x								x
Kentucky	45	HS-2 col.	4 yrs.		x			x				*
Louisiana	32	HS	3 yrs.	x								*
Maine	116	HS	4 yrs.	x								x
Maryland	23	HS	4 yrs.	x				x	x	(manipulation only)		
Massachusetts	379	HS	4 yrs.			x		no distinction—therapy				
Michigan	390	HS	4 yrs.	x								x
Minnesota	159	HS	4 yrs.	x			x	x			x	
Mississippi	10	HS-2 col.	4 yrs.			x		x	x			
Missouri	674	HS	4 yrs.	x								x
Montana	85	HS	4 yrs.	x				x			x	
Nebraska	172	HS	4 yrs.	x			x					x
Nevada	4	HS	4 yrs.	x				unlimited				
New Hampshire	23	HS-2 col.	4 yrs.			x		unlimited				
New Jersey	255	HS	4 yrs.		x			x	x			
New Mexico	20	HS	3 yrs.	x				x	not defined			
New York	388	HS-1 col. (1935)	4 yrs.		x			x	x			
North Carolina	58	HS	4 yrs.	x					x			*
North Dakota	27	HS	3 yrs.	x				x			x	
Ohio	440	HS	4 yrs.			x*				x	x	
Oklahoma	133	HS	4 yrs.	x						x	x	
Oregon	77	HS	4 yrs.		x			unlimited				
Pennsylvania	673	HS-1 col.	4 yrs.	x						x	x	
Rhode Island	60	HS	4 yrs.		x					*		x
South Carolina	14	HS	4 yrs.			x		not defined				
South Dakota	60	HS	4 yrs.	x				x				*
Tennessee	76	HS	4 yrs.	x			x					x
Texas	213	HS	4 yrs.		x			no distinction—therapy				
Utah	17	HS	4 yrs.	x								x
Vermont	32	HS	4 yrs.	x				not defined				
Virginia	28	HS-2 col.	4 yrs.		x			not defined				
Washington	166	HS	4 yrs.	x			x			x	x	x
West Virginia	53	HS	4 yrs.	x				unlimited				
Wisconsin	95	HS	4 yrs.		x		x	not defined				
Wyoming	15	HS	4 yrs.		x			not defined				
United States	8169	49 11	49	28	13	8	8	14	8			

*Signifies "with exceptions."

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Neutral Diet in Treatment of Nephritic Edema.—A further contribution from Dr. Lashmet is indeed welcome to us for the article reporting his work published in the *Jour. Am. Med. Assn.* (September 26), 1931, which we have previously reported, is a most significant contribution to the scientific dietary treatment of nephritis.

We quote exactly Dr. Lashmet's first paragraph as follows: "For many years the treatment of nephritic edema has consisted of a low protein diet and restriction of both sodium chloride and water. This treatment was based on the assumption that the kidneys, being damaged by the disease, could not excrete chloride and water. These substances would consequently be retained in the body and manifest their presence clinically as edema or dropsy. No satisfactory scientific work has been done to substantiate this reasoning."

One might, on the contrary, assume that the tissues retain these substances. If the extrarenal cause for edema be the true one, treatment should consist of attempting to release these substances from the cell rather than attempting to improve their elimination by way of the kidneys. The evidence which Dr. Lashmet has secured supports the latter view.

It has long been observed clinically that patients in acidosis are usually dehydrated. Consequently the attempt to dehydrate the patient by the use of acid was made. This procedure assumed that the kidneys were able to excrete water. A standard "salt poor" low protein diet was given and the amounts of fluid were varied from below 1,500 to above 4,000 c.c. daily. Despite the high fluid intake, no increase in edema occurred, no matter how the fluid was varied. However, when 15 grams of sodium chloride were added daily in addition to the diet, the edema rapidly increased whether the fluid content was above 4,000 c.c. daily or below 1,500 c.c. daily.

When the form of chloride was changed to hydrochloric acid, 165 c.c. of tenth normal hydrochloric acid daily, the edema promptly decreased, whether the fluid intake was maintained above 4,000 c.c. or below 1,500 c.c. daily.

Several points are important. First the edema did not increase with increase of fluid intake, and the kidneys had no difficulty in excreting water. Second, while chloride in the form of sodium chloride increased the edema, chloride given as hydrochloric acid decreased it. Third, it was suspected that the alkaline sodium ion, rather than the chloride ion, might cause the edema.

The usual standard, low protein, salt-free diet served to nephritics is decidedly alkaline and it is very important to take the reaction of the diet into account, as is illustrated by the following observations. A typical low-protein, salt-poor diet was given for forty days. The ash of this diet was decidedly basic. Though the fluid intake was held below 1,500 c.c. daily, there was a gradual gain in edema. When just enough hydrochloric acid was given each day to neutralize the alkaline ash of the diet, thus making the total ash neutral in reaction, there was neither gain nor loss of edema, whether the fluid was above 4,000 c.c. daily, or below 1,500 c.c. However, when the hydrochloric acid was increased slowly, making the total ash acid in reaction, the edema gradually decreased, regardless of a daily average fluid intake of 2,200 c.c. From these findings it is obvious to conclude that the reaction of the total ash, that is, whether the daily intake is alkaline or acid in reaction, is much more important than the amounts of ash, fluid or chloride, as such.

The above procedures have been many times repeated with the same results.

Dr. Lashmet and his colleagues have drawn the following conclusions:

"(1) Edema is not due to the failure of the kidneys to excrete water, and is independent of the fluid intake.

"(2) Edema is not due to the failure of the kidneys to excrete chlorides. Chloride as sodium chloride increases edema, but as hydrochloric acid or ammonium chloride decreases edema.

"(3) The reaction of the total ash intake is more important than the total amount of ash. Alkaline ash intake increases edema and acid ash intake decreases edema."

These conclusions, of course, revolutionize the treatment of nephritic edema.

Dr. Lashmet makes the following suggestions:

1. Diet.—

(a) Protein content. While both high and low protein diets have been advocated for the treatment of nephritis, a protein content of 50 grams is adhered to by Dr. Lashmet pending further investigation on this point.

(b) Ash content. The total ash is not as important as the reaction. While in an ideal diet for nephritics, the acid portion would exceed the basic, it is difficult to make up an acid diet with a low protein content and keep it palatable. A diet with neutral ash has been adopted and the quality and quantity have been varied to make it liquid, soft or general in order to meet the condition of the patient.

2. Ammonium chloride.—

The acid salt ammonium chloride is used instead of hydrochloric acid for much more available acid can be given this way than as hydrochloric acid. From 10 to 15 grams daily are used. The stomach seems to tolerate the salt best when it is given in three doses of several 0.5 gram capsules with meals.

3. Fluid intake.—

Instead of fluids being restricted, they are forced to 5,000 c.c. or more daily, regardless of the amount of edema. No difficulty in eliminating these large amounts has been encountered. It seems illogical to restrict fluids because restriction would result in the patient's being unable to eliminate all the waste products. In fact, forcing fluids should be indicated, since the fluid intake does not influence edema and since the kidneys have no difficulty in eliminating fluid. This procedure has been used two years with very gratifying results.

We are much indebted to Dr. Lashmet for the clearly written article on the epoch-making investigation in the treatment of nephritis. For all who are concerned with the dietetic treatment of the disease the excellent article giving diet and food tables in detail which follows Dr. Lashmet's article is heartily recommended in the original. It is entitled "The Neutral Diet" and is written by Gladys Enke of the University Hospital, Ann Arbor, Mich.

From *Trained Nurse and Hospital Review* (April, 1931), review of *Neutral Diet in Treatment of Nephritic Edema*, by F. H. Lashmet, M. D., in *Jour. Am. Diet. Assn.*, December, 1931.

Creosote Enemata in Pneumonia.—In pneumonia, after a wash-out enema, 40 minims of pure creosote, well shaken for several minutes in 2 ounces of warm milk are injected slowly well up the rectum. The enema should be retained about two hours. If not retained longer than half an hour it should be repeated, and in the adult ten drops of tincture of opium may be added to it. This dose in an adult should be repeated twice in 24 hours. In children under one year, two to ten drops is the dose, twice daily; in second infancy and adolescence five to ten drops, with an extra drop for each year. In old age, less than forty drops may be given. The action of creosote in the purely pneumococcic conditions appears to be almost specific, like serum; when it fails a streptococcic infection must be feared. It is interesting to note that in pneumococcic peritonitis Daru, Lodderich, and Mamon also advise its use for its selective action on the pneumococcus.

In the *Presse Medicale* (November 11), 1931, there is a useful summary of the value and details of the method. When our attention was called to this use of creosote we at once obtained some striking results in the treatment of pneumonia at all ages. We then applied it as a prophylactic in postoperative pulmonary complications. It quickly clears up catarrhal states in patients awaiting operation, and is now part of our routine preparation for all laparotomies or major operations of general surgery. In 150 cases of laparotomies of all types under open ether no case occurred of postoperative pneumonia. But in two cases in which the enema was omitted by mistake pulmonary complications occurred—a bronchial pneumonia in a simple inguinal hernia, and a severe and prolonged congestion of the right lung in a gastrectomy for hour-glass stomach. Both patients recovered, creosote being given at once on the appearance of the lung trouble. In urgent surgery we try to give the enema before the patient goes on the table if there is time; if not, immediately after the operation.

Bassett has also recently called attention to the value of creosote in 174 operations, mostly gynecological; no death occurred from lung complications when the drug was administered for some days before operation. Kocher, over 20 years ago wrote: "We do not hesitate to give large doses of creosote when necessary; 2½ drachms may be administered night and morning in the form of an enema with milk. Dr. Rollier, who has carefully investigated the action of this drug for some years, has shown it prevents com-

plications, and acts beneficially on the course of a pneumonia." Ian MacDonald, M.D., in the *British Medical Journal* From *The Trained Nurse and Hospital Review*, February, 1932.

We are indebted to Alice E. Houghton, Salt Lake City, for these abstracts from *The Trained Nurse and Hospital Review*.

Current Osteopathic Literature

Abstracted by Edward S. Gardiner, D.O.

THE COLLEGE JOURNAL, KANSAS CITY, MO.

16: 1-32 (Dec.) 1932

Surgical Clinics at the Lakeside. G. J. Conley.—p. 5.
*The Importance of a Careful Rectal Examination.—Mabel Andersen.—p. 7.
Dextrose: Its Use in the Toxemias of Pregnancy.—C. A. Povlovich.—p. 9.
Obstetrical Problems. X-ray—Cesarean. Margaret Jones.—p. 11.
Dermatology. Annie G. Hedges.—p. 13.
Sexual Impotence in the Male: Diagnosis and Treatment. K. A. Bush, Harper, Kan.—p. 19.
Masturbation. J. L. Jones.—p. 23.

Rectal Examination.—Reflexes arising from rectal pathology may be the cause of headaches, backaches, epigastric pain, sciatica, pain simulating chronic appendicitis, etc., according to Andersen. A routine examination of the rectum would eliminate a large number of incorrect diagnoses, she says, and it was Osler who stated that "no man can be trusted to make a diagnosis who cannot interpret a rectal palpation." Physicians often are guilty of prescribing suppositories and ointments before making a careful rectal examination. *Subjectively*, the patient's history is not a good guide, though pain and bleeding indicate lesions below the pectinate line. Above the pectinate line, even gross lesions cause little if any pain. The *objective* findings are by far the most important. No special preparation such as cathartics and enemas should be used. *Inspection* may show specific infection, external thrombotic hemorrhoids, abscess, or other external lesions. In *palpation* a rubber cot or glove with plenty of lubrication is necessary. It may reveal hypertrophied papillæ, polyps, fibrous or thrombotic internal hemorrhoids, fistulous tracts, lesions of the coccyx, growths, etc. In the female the position of the uterus should be determined and in the male, the condition of the prostate. The *instrumental* examination should come next. Andersen recommends the Brinkerhoff speculum. Internal hemorrhoids should be plainly visible as well as lesions of the crypts of Morgagni, infected crypts, torn crypts, and beginning sinuses. She concludes with a plea for routine rectal examinations, saying that in epigastric disturbances, headaches, bladder irritations, coccygeal and sacro-iliac lesions that fail to respond to treatment, the cause of the disturbance may be in the rectal area. Reflexes from the rectal area are definite and constant.

THE JOURNAL OF OSTEOPATHY, KIRKSVILLE, MO.

39: 665-710 (Dec.) 1932

*The Philosophy of Osteopathy. C. P. McConnell, Chicago.—p. 666.
The Osteopathic Physician of Today. G. W. Riley, New York City.—p. 670.
Case Reports on Thermogenic Treatment. Mr. G. H. Kroeger, Kirksville.—p. 674.
Forty Years. L. E. Page, Chicago.—p. 677.
Pathological Report Series No. 48. Messrs. J. V. Adams and R. A. Steen, Kirksville.—p. 679.
Insurance Problems. H. W. Gamble, Missouri Valley, Ia.—p. 681.
*Postgraduate Study. W. J. Deason, Wichita, Kan.—p. 687.

Philosophy of Osteopathy (first installment).—Unlike many other philosophical systems, osteopathy, says McConnell, is based upon a sound premise. Dr. Still's philosophy went deeper than the mere outward manifestations of nature, and he never swerved from the "basic import of structure." His hypotheses flowed naturally into therapeutic achievement. Still was more concerned with the philosophy of osteopathy than with its practical application, for every science must begin as a philosophy before it can become an art. The practical application will take care of itself if the basic premise is true. Still's hypothetical interpretation of the unknown has been abundantly proved correct in the research laboratory and at the bedside.

Postgraduate Study.—The best investment for a doctor, says Deason, is the preparation for his work. The second best investment is the continuance of this preparation by means of observing new methods, and new scientific principles. The third best investment is the modernization of his office with equipment of proven value.

M.O.H. NEWS, BOSTON, MASS.

5: 1-8 (Nov.) 1932

Combination Lesions. A. F. McWilliams.—p. 1.
*Treatment of Fractured Neck of the Femur. A. E. Leach, M.D.—p. 3.
Nasal Septum Pathology. C. R. Crosby.—p. 5.

Fractured Neck of Femur.—The [surgical] neck of the femur, says Leach, is the weakest part of the bone. The blood supply here is almost inadequate and repair of a fracture at this point is not by callus formation but by interstitial union, and requires at least six months. Following the radiographic diagnosis, a careful physical examination of the patient should be made to determine whether he can stand a spica plaster bandage for six months. Measurements of the broken leg are made and the limb pulled down until it is equal in length to the good limb. Internal rotation is made until the toes point well inward, using the patella as a guide, and the limb abducted to its normal limits. The cast is applied with a wooden spreader between the thighs. The patient is put to bed and moved several times during the day to prevent pneumonia and bedsores. At the end of the six month period the cast is removed and massage, heat and passive movement used. In seven months the patient should begin walking with crutches.

THE WESTERN OSTEOPATH, LOS ANGELES

27: 1-20 (Nov.) 1932

Fishbein vs. The Osteopathic Unit. L. C. Chandler, Los Angeles.—p. 5.
*The Consideration of Posture in the Physical Examination. R. H. Williams, Rochester, N. Y.—p. 7.
Applied Physiology in the Management of Cardiac Disease. L. C. Chandler, Los Angeles.—p. 10.
Pancreatic Stimulation in the Treatment of Diabetes. S. G. Bandeen, Louisville, Ky.—p. 13.

Posture.—Williams claims that bad postural habits are a primary causative factor in practically all of the chronic systemic conditions. School room and office should be adapted to the individual. Exercise is important in correcting and maintaining correct posture. Williams gives an exercise which is widely applicable and requires a minimum of time: (1) Stand with heels, hips, back of shoulders and head touching the wall. (2) Elevate the arms so that they touch the wall at the elbow and back of the hands, parallel to each other and straight up from the shoulder. (3) Take a long deep breath, hold it for 4 seconds. In this way the ribs are elevated sharply in front, and the fingers reach up 1 to 2 inches higher. (4a) Without letting the ribs fall or the tips of the fingers sink to a lower level, let the air escape from the lungs by letting the diaphragm fall and the abdominal muscles relax. (4b) Repeat this deep breath 4 times, holding each breath four seconds, and using the diaphragm and abdominal muscles for each respiration after the first. Posture may affect the feet and produce defects. Structural spinal curvature, not caused by violent injury or tuberculosis, is caused by infantile paralysis, says Williams. Many attacks of poliomyelitis are so slight as to escape attention, but the slight paralysis on one side of the spine is great enough to start a torsion which ultimately results in a structural curvature. Functional curvatures may be postural in origin. In conclusion Williams expresses a belief that the correction of postural defects is just as important as the correction of lesions.

NARCOTIC DRUGS

In the year 1931, the United States imported more opium than for several years previously. The amount was approximately 240,443 ounces of opium, morphine, codein, dionin, and other opium derivatives, sold in the United States, and 3,667 ounces exported.

There are calculated to be 100,000 drug addicts in this country not under medical care. The highest price quoted for illicit morphine was, in wholesale lots, $200 an ounce.

R. C. Mc.

Current Medical Literature

Etiology of Breast Cancer—Experimenting with oleic acid and some completely saturated mineral oils, Twort and Bottomley have found that their carcinogenic potency does not materially affect the epithelial cells, any more than to produce a benign tumor, but the action, particularly of oleic acid, upon sebaceous cells has produced malignant adenomas. Other related compounds of the same structural formula were used with similar results.

For these and the following reasons, these investigators believe that the chief etiological factor of carcinoma of the breast is a group of compounds containing the carbon skeleton of phenanthrene acting in conjunction with oleic or other unsaturated fatty acids:

"It has been conclusively shown statistically that the female breast which is not allowed to function normally is more liable to develop cancer than the one to which a child has suckled over a definite period of time, and then allowed a lengthy rest until a subsequent child is born. Anything contrary to nature such as no lactation, under-lactation, and over-lactation . . . may predispose to cancer. . . .

"In the event of no lactation or under-lactation we shall have decomposition of the excretory products and consequent liberation of free oleic and other fatty acids. The products of decomposition will be unable to find their way to the surface and will lie in situ in the gland acini and the ducts until removed by the body fluids and wandering cells of the host. If, as we surmise, the oleic acid and probably also related fatty acids act carcinogenically on the secreting cells of the breast we must not lose sight of the fact that they may be operating in particularly favorable surroundings. Milk is necessarily a carrier of abundant growth stimulins and it is certainly not deficient in vitamins, so that we are bound to assume an extremely favorable environment for the acid to exert its malignant influence."—Twort, C. C., and Bottomley, A. C.: The Etiology of Breast Cancer, *Lancet*, 2: 776-780 (Oct. 8) 1932.

The Dilemma of Psychiatry.—Some of the difficulties that the student of psychiatry encounters are set out in an article in *The Medical Herald*, November, 1932 by J. Allen Gilbert, Ph.D., M.D. The nonmaterial values of life, he says, find no adequate classification or expression in the sense catagories of science, space time and causation. Psychiatry deals with these nonmaterial values, and cannot be classed as science in the sense of the objective sciences. On the other hand, "science assumes the concrete and deals with it as a circumscribed entity."

Gilbert says that psychiatry cannot be confined in these concrete categories of space time and causation, for these are merely instruments of science in the delineation of life which is nonspatial, nontemporal, and noncausal. "Science persists in her claim to universal applicability, while experience stands by and laughs up her sleeve, freed from the limitations of space time and causation. The whole galaxy of thinkers from Kant to Einstein drives home to us the fact that space time and causation must be eliminated as elements of reality."

To establish psychiatry as a science, fundamental assumptions must be set up, but psychiatry has failed in this respect. The rather elusive element called the "personal equation" or the "personality problem" increases in complexity as civilization becomes more complex. Furthermore, a neurosis is not a disease entity any more than tuberculosis is an entity. It is a relation pure and simple. Neurosis is not a psychopathology "except as we trump up a sociological 'norm' as a comparative hypothetical standard. The normal is an abstraction. In the neurosis, just as in tuberculosis, there is enacted a drama in which the struggle to individuation not only implies but necessitates a complementary reaction in so-called environment. . . . "The primary duty of psychiatry is to determine what it means by an individual." . . . Personality is more real than a tubercle bacillus, for in the words of Eddington, 'the stuff of the world is mind-stuff.' . . . To view the individual as the product of his environment is but to obscure the trail by which he (or it) has fought his way to a realization of self. Cause and effect fuse into experience."

He defines individuation: "Individuation of the highest efficiency is reached when the individual succeeds in attaining and accepting his relative importance to the group. So soon as he digresses in either direction from this normal balance the neurosis of necessity asserts itself. It is the function of psychoanalysis and psychiatry to bring him to such a mental attitude. He who fails to adjust to his environment withdraws from the struggle and enters the lonely trail through introversion to the final elimination of himself from society."

It therefore follows that psychiatrical cases must be treated with the object of bringing the individual to recognize and accept his relative position in the group. Despots, he says, are produced as a compensatory reaction resulting from a feeling of inability to accept their normal relative importance to the regime of which they are a part.

Treatment is also dependent upon the initiative and mentality of the neurotic. It requires fortitude for him to regain his equilibrium, but most neurotics, according to this author, attempt to intregrate themselves by proxy. They are usually in an escape mechanism, and side-step the issues of the case. "*Genuine therapeutics must come from the inside out and not vice versa.* The road to normal mentality and genuine public welfare is through the personal initiative of the individual. Therapeutics consists in helping that individual to find and adopt that line of march."

Irradiated Foods for Rickets.—The following items have been taken from an article by Louis J. Auerbacher in *Medical Journal and Record* of November 16, 1932:

1. Rickets has been shown to be a preventable disease. It is also admittedly curable, when once established.
2. It is one of the most common diseases of infancy and childhood—authorities state that from fifty to seventy-five per cent of infants have some degree of rickets.
3. Rickets will continue to exist until physicians and parents realize that every child must have food fertile in antirachitic substance.
4. Accepted antirachitic agents have failed to be prophylactic for rickets, due to one reason or another.
5. Irradiated foods, especially irradiated milk, milk being the only food for the baby, stand out as a paramount achievement in the science of nutrition.

He quotes Hess as saying that "if all the milk for infants could be satisfactorily irradiated, there would be few, or very mild, cases of rickets. . . . It has been shown that irradiated fluid and irradiated dry milk will largely protect against rickets, when one pint a day is given."

Treatment of Burns With Tannic Acid Dressings.—A modification of the tannic acid method is suggested by Hunt and Scott as follows:

For second and third degree burns the method used is to paint the burned area with a 5 per cent aqueous solution of tannic acid and apply a dressing soaked in the same solution. No anesthetic is required. The next day the dressing is repeated. On the third and fourth days the crust is reinforced with collodion. Toward the end of the second week, the crust separates exposing the new epithelium which has grown beneath it.

The first-aid treatment of all burns consists as follows: Dressings are applied that have been soaked in the 5 per cent solution (20 grs. of the powder to an ounce of warm water). Vigorous scrubbing and cleaning are avoided. The tannic acid is applied with a soft camel's hair brush (¾ in. wide) instead of a spray.—Hunt, J. H., and Scott, P. G.: the Treatment of Burns in Outpatients with Reinforced Tannic Acid Dressing, *Lancet*, **2**: 774-776 (Oct. 8) 1932.

The Use of Obstetrical Forceps.—Plass condemns the promiscuous use of forceps. The use of forceps, he says, is often performed under conditions which would be deemed a bar to satisfactory surgical measures of any other form. Excluding the large number of "convenience forceps", the real indications for the operation include the following: Cardiac involvement and toxemia; considerable delay in the progress of labor, emphasis being placed on the cessation of labor rather than the total duration of the birth process. The old rule "one hour on the perineum and two hours in mid pelvis" still governs conservative practice.

He gives the classic conditions for the safe application of forceps as follows:

1. The cervix must be fully dilated or easily dilatable.
2. There must be no disproportion between the head and the pelvis.
3. The position of the head must be accurately known, so that the blades may be applied in the biparietal diameter and rotation effected in the proper direction.

4. The membranes (bag of waters) must be ruptured.

Plass considers that only 3 to 5 per cent of all labors require forceps delivery, even under the strictest indications, and that the operation always carries a definite risk to both mother and child. The difficulties and dangers may be minimized by attention to the following general principles:

1. Use only recognized indications for forceps extraction. Do not be stampeded into thinking that it is a harmless operation.

2. Observe all aseptic principles and remember that sepsis constitutes a real danger.

3. Demand the prerequisites for the proper application of instruments; (see above).

4. Employ the instrument with which you are most familiar, and remember that that it is not so much the forceps as the man behind it that is important.

5. Be prepared to do an episiotomy in order to avoid deep perineal lacerations.—Plass, E. D.: The Difficulties and Dangers of Forceps Delivery, *Jour. Am. Med. Assn.*, **99:** 1817-1819 (Nov. 26) 1932.

Direct Cross-Matching for Blood Transfusion.—Direct cross-matching is performed by suspending the donor's red blood cells in the recipient's serum and vice versa. Proceed as follows:

1. Assemble the following: four small test tubes, two glass pipettes, a one per cent solution of sodium citrate in normal saline solution and a microscope.

2. Withdraw, by means of a needle puncture, from the donor's cleansed ear lobe, cleansed finger or any other eligible site a half cubic centimeter of blood. This is collected in a test tube containing 5 c.c. of one per cent normal saline solution.

3. Collect also one-half cubic centimeter of the donor's blood in an empty test tube.

4. Collect similarly like amounts of the recipient's blood. There are now four test tubes carefully numbered: two of these test tubes contain a suspension of red cells in a one per cent solution of sodium citrate in normal salt solution.

5. Place two drops of the donor's serum and two drops of the recipient's red blood cells close to one end of the glass slide, stir gently and place thereon a coverglass. Close to the other end of the same glass slide, place two drops of the recipient's serum and two drops of the donor's red blood cell suspension, stir. Place a coverglass on top.

6. Examine these two coverglass preparations under the microscope with low and high power; observe for fifteen minutes. If at the end of this time, agglutination be absent from both glass slide preparations, and if the blood corpuscles do not present a granular appearance, the bloods are compatible. Agglutination means incompatibility, it means possible hemolysis and hemolysis means dangerous and perhaps fatal reaction. Agglutination calls for the rejection of that particular donor in that particular case.—Heineck, Aime Paul: Blood Transfusion, *Medical Herald*, **51:** 211-216 (Sept.) 1932.

A TABLE TO DIFFERENTIATE PULMONARY ACTINOMYCOSIS AND PULMONARY TUBERCULOSIS

Writing in the *New York State Journal of Medicine* for November 15, 1932, William M. Genther, M.D., and Raymond K. Pendleton, M.D., report two cases of pulmonary actinomycosis. They summarize as follows: "Pulmonary actinomycosis is a rare disease, but occurs often enough in any large, active, medical practice to force clinicians to be at least on the alert for its occurrence. Given a case with [this] clinical syndrome . . . namely, cough with expectoration, frequently bloody; night sweats; loss of weight and strength; and chest pain, associated with indefinite physical findings of a bronchitis or partial consolidation or cavity formation, and further associated with an intermittent fever; a moderate increase in leukocytes; and the persistent repeated absences of tubercle bacilli in the sputum; then the possibility of pulmonary actinomycosis should be borne in mind. Add to this x-ray findings which are not definitely those of tuberculosis and the possibility of pulmonary actinomycosis is even more strongly suspected."

A table to differentiate pulmonary tuberculosis and pulmonary actinomycosis has been drawn up by Christon and Warwick* which has been given in this article as follows:

ACTINOMYCOSIS	TUBERCULOSIS
1.—Lower lobes usually involved.	1.—Upper lobes usually involved.
2.—Lymph nodes never involved.	2.—Lymph nodes involved.
3.—Pain common and severe.	3.—Pain rare.
4.—Cavity formation less common.	4.—Cavity formation frequent.
5.—Spreads by continuity.	5.—Metastasis by blood.
6.—Frequent sinus in chest wall.	6.—No sinuses.
7.—Abscess formation frequent.	7.—Abscess formation less frequent.
8.—Often spreads through diaphragm.	8.—Rarely spreads through diaphragm.
9.—Fungus in sputum.	9.—Tubercle bacilli in sputum.

*Christison, J., and Warwick, M.: Actinomycosis of lungs and suprarenals, *Journal American Medical Association*, 89: 1043, Sept. 24, 1927.

THE INFLUENCE OF BRAN ON THE ALIMENTARY TRACT

Civilized man has developed highly milled flour in which the natural cellulose content has been eliminated. The daily ration of white flour, cane sugar, butter, lean meat gives little fibrous material to serve as ballast in the alimentary tract. It is a common fallacy that the crude fiber of vegetables is sufficient to take care of this need, for investigators have discovered that the vegetable fiber is sufficiently delicate to be almost entirely destroyed by a bacterium in the alimentary tract which has been named, Bacillus cellulosæ dissolvens, which organism also dissolves cellulose in vitro.

Now it has been found that wheat fiber is fairly resistant to the action of this bacterium, and while no one should suggest a return to the exclusive use of whole grains, simply ground, the general inclusion in the diet of a portion of the bran removed from the wheat is to be highly recommended. Bran has the additional advantage of supplying a considerable amount of Vitamin B, and of available iron.

Smooth muscle responds to slight degrees of tension, and motor activities of the stomach and intestines are brought about and regulated by the internal pressure due to the presence of food or gas. One investigator has said, "Constipation may develop if the colon is too thrifty in absorbing food residues and water or if the diet is too poor in roughage or in other substances that stimulate peristalsis."

People living sedentary lives require less food, and the tendency is to eat highly refined foods, because of little desire for a large volume. In consequence they are liable to constipation which may often be corrected by supplying a little roughage in a form not unpleasantly bulky.

The use of bran may be overdone, as may the use of white flour. There are persons with hypersensitive alimentary tracts, liable to stasis upon the least irritation, mechanical or chemical. Such persons react to food residues unfavorably, and need prescribed diets.

A comparison of the effect of bran with common laxatives has shown that the quantities given had not so much effect as a small quantity of bran.—Summary from article in The Journal of the American Dietetic Association, 8: (July), 1932.

STATE MEDICINE STULTIFIES

The public should be interested in avoiding the pitfalls of any system which discredits the awards of competitive medicine—those rewards which appeal to the highest type of young people and which magnify the values occurring in a selected personnel, which should compose the profession.

The medical profession sees ahead and is deeply interested in preventing any system from being adopted which threatens the steady advancement of scientific knowledge and progressive development in the art of healing. Unfortunately, medical men themselves are not

aware of the fact that experience shows that in all countries in which medical practice has become subservient to extraneous control progressive scientific medicine and the best medical care are utterly incompatible under any such system, whether it be governmental or not.—E. H. Cary, M.D., President of the American Medical Association, *A. M. A. Bulletin, 27*: 174-177 (Nov.) 1932.

Book Notices

A TEXTBOOK OF PATHOLOGY. By Francis Delafield and T. Mitchell Prudden. Cloth. Pp. 1339, with twenty full-page plates and eight hundred and thirty illustrations. Fifteenth edition. Price, $10. William Wood & Co., 156 Fifth Ave., New York City, 1931.

This edition lives up to the excellent standard set through many years in which the science of pathology has advanced so fast that the book itself has been completely revolutionized.

This volume consists of three parts: General pathology, special pathology and postmortem technic. Some related subjects, such as immunology and parasitology, are included. It is a valuable textbook for either students or practitioners.

HANDBOOK OF BACTERIOLOGY. By Joseph W. Bigger, M.D., Sc.D. (Dublin). Professor of Bacteriology and Preventive Medicine, University of Dublin. Third Edition. Cloth. Pp. 459. Five color plates and 84 illustrations. Price, $5. William Wood and Company, New York, 1932.

A textbook for students and practitioners that is written clearly. The student's time will not be wasted in mastering a large volume for this book is condensed to include the essentials of bacteriology. Laboratory procedures are described. Theories of immunity form an interesting chapter. Immunity, he says, may be due either to the cells or to the fluids of the body, and "for several years there was an acute controversy between the upholders of rival theories, the cellular and the humoral. Metchnikoff, the leader of the cellular school, believed that immunity was entirely due to certain cells, the phagocytes, found in the blood and tissues, which had the power of ingesting and destroying bacteria. His opponents saw in Metchnikoff's phagocytes mere scavengers which removed the bodies of bacteria slaughtered by various substances in the plasma of the blood. It is now generally conceded that . . . the phagocytes are probably the most important of the body's defenders, but without the help of the plasma they are powerless."

E. S. G.

THE MACHINES WE ARE. By Robert T. Hance. Cloth. Pp. 381. Price, $3. Thomas Y. Crowell Co., 393 Fourth Ave., New York City, 1932.

A biology professor undertook a series of popular radio talks on biology. He was amazed by the response to the opening lectures and by the time he was through, had on his hands a book of thirty pertinent chapters, interesting, non-technical, and authoritative, taking the message of animal biology to the general reader.

REFLEX ACTIVITY OF THE SPINAL CORD. By R. S. Creed, D. Denney-Brown, J. C. Eccles, E. G. T. Liddell and C. S. Sherrington. Cloth. Pp. 183. Price, $3.25. Oxford University Press, 114 Fifth Ave., New York City, 1932.

This is a valuable text to anyone interested in the physiology of the nervous system as related to clinical medicine. The contents of the book include chapters on the reflex arc, the spinal gray matter, the flexor reflex, the stretch reflex, reflexes in extensor muscles other than postural reflexes, central inhibition, and lower reflex coordination. The plan of the book, as stated in the preface and as carried out, "is to introduce and describe seriatim a number of reflexes typically obtainable from the mammalian preparation. These in every instance are reflexes which take expression in the skeletal musculature, predominantly in that of the limbs. The description and discussion given of them in each case are directed mainly toward analysis of the working of the reflex mechanism. In that connection an object of study kept in view throughout is the individual motor unit as a basal element of the reflex response. Improved technic provides more precise observations than were formerly possible of reflex time relations and reflex quantities of effect both mechanical and electrical; hence the interpretation of reflex response in terms of the motor unit itself becomes a tangible objective."

THE PRINCIPAL NERVOUS PATHWAYS. By Andrew Theodore Rasmussen. Cloth. Pp. 73. Price, $2.50. The Macmillan Co., 60 Fifth Ave., New York City, 1932.

The large pages of this book are made up of twenty-eight charts and schemas and the necessary accompanying explanatory texts. They are the result of years of effort to present a fairly accurate knowledge of the more important nervous pathways in the central nervous system and their relation to the peripheral nerves. Neuroanatomy is here organized into its functional units, bringing together the related structures and eliminating most of the details which are not accurately enough known to serve at least diagnostic purposes. One, for instance, takes up the auditory system and others, innervation to the eye; respiratory system; gustatory system, etc., including the cranio-sacral division of the general visceral efferent system; innervation of blood vessels, etc. There is a comprehensive index.

MENDELISM AND EVOLUTION. By E. B. Ford. Cloth. Pp. 116. Price, $1.50. The Dial Press, 152 W. 13th St., New York City, 1931.

A brief outline with little attempt at popularization, confined to non-human species. Each aspect of the subject is discussed in the light of recent research, including the experiments of R. A. Fisher, Haldane, Huxley and Timofeeff-Ressovsky. The book includes an excellent short bibliography and a glossary.

MAN AND MEDICINE. By Dr. Henry E. Sigerist. Cloth. Pp. 340. Price, $4. W. W. Norton & Co., 70 Fifth Ave., New York City, 1932.

An unusually well written introduction to medical knowledge, translated from the German. It is written primarily for young people needing knowledge of the history and philosophy of medicine to enable them to decide whether to take it up as a life work, but it is of value also to any intelligent layman. It is divided into seven parts: Man; Sick Man; The Signs of Disease; Disease; Causes of Disease; Medical Aid, and The Physician.

THE USE OF THE SELF. By F. Matthias Alexander. Cloth. Pp. 143. Price, $2.00. E. P. Dutton & Co., Inc., 286-302 Fourth Ave., New York City, 1932.

Still holding, as he did in his previous books, that "the sensory make-up of mankind is admittedly gradually becoming more and more untrustworthy" (p. 117), Alexander tells of his methods of teaching people to make the best use of themselves by getting away from immediate end-seeking, by understanding how and why they are deceived by their own senses in the things their own muscles are doing, and by understanding what is required to bring about a harmonious coöperative use of all parts of the self, he shows particularly how physicians can never expect thoroughly to diagnose and successfully to treat until they understand the methods of directing harmoniously the activities of the body.

THE CURATIVE VALUE OF LIGHT. By Edgar Mayer, M.D. Cloth. Pp. 175. Price, $1.50. D. Appleton & Co., 35 W. 32nd St., New York City, 1932.

One of the best books on the subject yet published. It discusses the use of sunlight and also of ultra-violet radiation, both from the standpoint of its dangers and of its value in various types of cases.

THE CONQUEST OF OLD AGE. By Peter Schmidt, M.D. Cloth. Pp. 307. Price, $5. E. P. Dutton & Co., Inc., 286-302 Fourth Ave., New York City, 1931.

Schmidt is one of the outstanding disciples of Steinach. This edition brings up to date a volume first published in 1928. It goes directly to the public with its theory of rejuvenation by a reactivation of the so-called puberty glands. It is made up in large part of reports of cases treated by the author.

FEMALE SEX HORMONOLOGY. By William P. Graves, A.B., M.D. Cloth. Pp. 131. Price, $3.50. W. B. Saunders Co., West Washington Sq., Philadelphia, Pa., 1931.

A brief review of recent advances in this field, prepared by one who has been only an intensely interested clinical spectator, for the purpose of furnishing a concrete picture of a complex subject for use in the lecture room. It contains, in brief, the story of the physiology of the female reproduction system in the light of modern ideas. Well organized and well presented, it contains a valuable glossary and a splendid list of references.

JUDGMENT ON BIRTH CONTROL. By Raoul de Guchteneere. Cloth. Pp. 224. Price, $2. The Macmillan Co., 60 Fifth Ave., New York City, 1931.

This book is sanctioned by the Roman Catholic Church, bears the "imprimatur" of Cardinal Hayes and supports at length the church's ban on contraception, by arguments drawn from considerations of personal health, of eugenics, of social ethics, of economics and public policy, and of morality.

DIAGNOSIS AND TREATMENT OF DISEASES OF THE THYROID GLAND. By George Crile and Associates. Cloth. Pp. 508, with 164 illustrations. W. B. Saunders Co., W. Washington Square, Philadelphia, 1932.

Since the passing of Kocher, the Swiss, his mantle of leadership in the surgery of the thyroid has descended upon George Crile. He and two dozen of his assistants have collaborated in producing this text. Crile says that this specialty touches every field of medicine. Since the thyroid is the principal agency for controlling metabolism, its improper functioning affects practically every system of body activity.

Beginning with a detailed discussion of the physiology of the gland, the effects of the administration of iodine or the withholding of it, and a workable classification of goiters and thyroid tumors, the authors carry on through all the thyroid pathologies, the differential diagnosis, and then the treatment.

A very complicated and complete discussion of the operative treatment covers nearly seventy pages and still room is left for x-ray treatment. Drugging and nursing are also well handled.

One statement in the summary is a little startling. We quote: "When properly performed, thyroidectomy improves or cures every patient of hyperthyroidism." And again the authors say: "We know that the thyroid gland does not of itself originate hyperthyroidism . . . hyperactivity is imposed on the thyroid . . . but the fact remains that the thyroid gland is the key to the cause and the control of disease." And again, "The surgeon . . . has found it necessary to overcure his patient . . . by taking out such an added amount of thyroid tissue that for a time the patient will be temporarily in a state of hypothyroidism." During this time of hypothyroidism the patient may return to normal mental poise and normal weight.

The book commends itself to the general practitioner and to the surgical specialists. In this regard it is a rare volume.

R. C. Mc.

PROCEEDINGS OF THE FIRST INTERNATIONAL CONGRESS ON MENTAL HYGIENE. Vols. I and II. Published by the International Committee for Mental Hygiene, Inc. Paper. Vol. I, 803 pp. Vol. II, 840 pp. Special price, $5 for two volumes. Boyd Printing Company, Albany, N. Y., 1932.

It is rather surprising to note that there have been organizations for the purpose of spreading the principles of mental hygiene for twenty-one years and that such organizations have been founded in twenty-two countries.

These two volumes are the record of the proceedings of the First International Congress and are replete with interesting and carefully-worked-out papers on various phases of the promotion of proper mental hygienic surroundings.

The fundamentals of mental hygiene in the various age divisions are discussed thoroughly. The two volumes constitute almost an encyclopedia on psychiatry, although mental derangements are discussed more thoroughly from the prevention standpoint.

Educational systems receive a considerable discussion, and educational efforts in institutions for the care of the deaf mute, the mentally incompetent, and those confined in correctional institutions, all come in for meticulous and close study. The average professional reader will find these books to be eye-openers. They are full of examples of cases the like of which are met regularly in general practice.

We should remind ourselves that no physician is properly prepared to handle the cases presenting themselves to a general practitioner without a very well outlined idea of the prevention and treatment of mental derangement.

Knowing, as we do, that a tremendous majority of mental disturbances originate in the inability of a weak mind to react to its environmental strains, the field of mental hygiene becomes the easy method of attack on this rapidly increasing group of pathologies.

R. C. Mc.

PHYSICAL THERAPEUTIC TECHNIC. By Frank Butler Granger, A.B., M.D. Cloth. Pp. 436. Revised. W. B. Saunders Co., W. Washington Square, Philadelphia, 1932.

The author claims that the book is written for the general practitioner but it is difficult to understand how a general practitioner could find time to manipulate all the apparatus catalogued and described as useful.

Starting with a few chapters on the physics and chemistry of light and electricity, the author proceeds to discuss the structure of all forms of electrical therapeutic apparatus. A small but useful amount of space is devoted to a rather elementary discussion of massage and hydrotherapy. The book is completed by a discussion of the physical therapy treatment of every disease from abscess to writer's cramp.

It is comparatively conservative in its claims for the effectiveness of electrotherapeutics and the therapeutics of light.

No reader need hesitate to buy this book because of the fear that it may be too technical to be practical, a fault so common in works discussing such subjects. The author is direct and to the point, utilizing little space for conjecture or unnecessary theory.

In these days when no physician can ignore as a therapeutic measure (even if he does not utilize them himself) diathermy, "fever treatment," electrically produced electrocoagulation and the other forms of electrosurgery, the text offers illuminating information.

Its publishers are among the leaders in the field of publications of interest to physicians.

R. C. Mc.

WHO'S WHO IN AMERICA. A biographical dictionary of notable living men and women of the United States. Volume 17, 1932-1933. Cloth. Pp. 2671. Price, $8.75. A. N. Marquis Co., Chicago.

This new volume contains brief, up-to-date biographical sketches of nearly 30,000 of the most notable living Americans—men and women—in all parts of the world, 3,500 of which have appeared in no previous issue.

It includes as nearly as possible sketches of all living Americans whose position, activities or achievements make them of general interest, telling just the things every intelligent person wants to know about those who are most conspicuous in every reputable walk of life.

There is an index by state and postoffice covering nearly 100 pages, making it easy to find the names for any particular section or locality.

There is a study of the educational advantages enjoyed by those listed in the book, one on the occupations and environments of fathers of American notables and a list of recent deaths.

The new page size of the book adopted for the fourteenth edition has been retained so that the book remains thinner than formerly and much easier to handle.

Conventions and Meetings

Announcements

American Osteopathic Association, Milwaukee, July 24-28.

American Osteopathic Society of Ophthalmology and Otolaryngology, Milwaukee, July 19-24.

American Osteopathic Society of Proctology, Milwaukee, July 24-28.

American College of Osteopathic Surgeons, St. Joseph, Mo.

Arkansas state convention, Pine Bluff, June.

California state convention, Oakland.

District of Columbia convention, Washington, May.

Eastern States convention, New York City, March 24 and 25.

Florida state convention, St. Petersburg.

Illinois state convention, Springfield.

Indiana state convention, Anderson.

Kansas state convention, Larned.

Michigan state convention, Lansing.

Middle Atlantic States convention, Lynchburg, Va.

Minnesota state convention, St. Paul, May 5 and 6.

Missouri state convention, Springfield, October.

Montana state convention, Glendive.

New Mexico state convention, Albuquerque, September.
New York state convention, Syracuse, October.
Oklahoma state convention, Oklahoma City, May.
Tennessee state convention, Nashville, May.
Vermont state convention, St. Albans, October.
Virginia state convention, Richmond.

ARIZONA

State Association

A. B. Stoner reports that at a meeting held November 12, 1932, the Arizona Society of Osteopathic Physicians and Surgeons was duly formed. The following officers were elected: President, Dr. Stoner; vice-president, Philip F. Hartman; secretary-treasurer, Alfred A. Barker, all of Phoenix. The by-laws suggested by the A.O.A. were adopted. An enthusiastic meeting was had.

CALIFORNIA

East Bay—San Francisco

The December 3 and 4 meeting was held at the East Bay Osteopathic Clinic and the Hotel Oakland. The program included the following: Paul K. Theobald, Oakland, "Constipation and Flatulence"; Jack Goodfellow, Oakland, "Colon Hygiene"; Frank E. MacCracken, Fresno, "Corrective Exercises in Conjunction with Treatment"; H. H. Fryette, San Mateo, "Psoas Lumbago"; Lester R. Daniels, Sacramento, "Prevention and Treatment of Athletic Injuries"; Louis C. Chandler, Los Angeles, "Pneumonia and Its Complications."

Glendale

Lucille Van Velzer, secretary, reports that at the first November meeting, Charles H. Spencer, Los Angeles, was the principal speaker. J. A. Marple was program chairman. At the November 21 meeting the speaker was W. F. Traughber, Hollywood. T. H. Vallier arranged the program.

Hollywood Luncheon Club

At the November 22 meeting W. Curtis Brigham concluded his series of talks on methods of preventing cancer.

Pasadena

The regular meeting was held November 19 at which J. Strothard White presided. A. V. Kalt introduced the speaker, Mr. Herbert A. Packard of the Los Angeles County Probation Department. Moving pictures of Louis B. Triplett's technic were shown, which were taken by Stewart J. Fitch.

The next meeting will be held December 15.

Sacramento Valley

At the December 3 meeting Louis C. Chandler, Los Angeles, spoke on "Pneumonia and Its Complications."

San Diego

At the November 29 meeting W. W. W. Pritchard, Dean of the Los Angeles College, discussed the treatment of spinal curvature. He was introduced by William W. Jenney.

San Jose

At the December 4 meeting Louis C. Chandler, Los Angeles, spoke on "Pneumonia and Its Complications."

Santa Barbara—Ventura

The December 3 meeting had as principal speaker K. Grosvenor Bailey, Los Angeles. His subject was "Laboratory Aids to Diagnosis of Nervous Disease." The meeting was held in the offices of A. P. Ousdal, Santa Barbara, and Floyd Smith, Oxnard, had charge of the meeting.

COLORADO

State Association

The November 19 meeting was held at Fort Collins. The principal speaker was R. R. Daniels, Denver, "The Physiological Aids in Acute Diseases." Legislative problems were discussed. A memorial service for the late J. E. Zechman was held.

The January meeting will be at Colorado Springs.

ILLINOIS

State Association

A meeting of the trustees and chairmen of the Legislative Committee of the Illinois association was held at Springfield, November 27.

C. O. Casey, Decatur, outlined the legislative program which will be presented by the association at the January meeting of the State Legislature. William O. Medaris, Rockford, reported for his district. Charles Kalb, Springfield, presented plans for the next meeting of the association.

Chicago—City Society

At the December 1 meeting, V. W. Purdy, Milwaukee, President of the A.O.A. was the principal speaker.

Chicago—West Suburban

A meeting was held November 19 at the home of Mr. and Mrs. Marc J. Fowler. S. H. Herzfeld, M.S., Professor of Chemistry at the Chicago College, spoke on "Vitamins and Deficiency Diseases."

INDIANA

Indianapolis

A meeting was held December 2 at the Hotel Washington.

St. Joseph Valley

The November 17 meeting was held at Goshen. Leon E. Page, Chicago, spoke on "Physical Diagnosis of Cardiac and Pulmonary Diseases."

IOWA

Washington—Henry—Louisa Counties

A new tri-county society was formed at a meeting held November 10 at Washington. The counties include Washington, Henry, and Louisa. The officers are: President, H. L. Gordon, Brighton; vice-president, E. V. Chance, Winfield; secretary-treasurer, Henrietta Griffith, Washington. The meeting was held in the offices of A. W. Clow.

KANSAS

Arkansas Valley

The regular monthly meeting was held at Lewis, November 17. A turkey dinner was served followed by a professional program in the offices of F. E. Loose.

Central Kansas

A meeting was held at Herington, November 17. The principal speaker of the evening was Wilborn J. Deason, Wichita, who spoke on "Thermogenic Treatment." Plans were made to invite the A.O.A. to have their 1934 convention in Kansas.

North Central Kansas—South Central Nebraska

A meeting was scheduled to be held in Edgar, December 8.

Southwest Kansas

The November 15 meeting was held at Garden City in the offices of Roy A. Leopold. Officers were elected as follows: President, E. F. Pellette, Liberal; vice-president, A. B. Slater, Lakin; secretary-treasurer, V. A. Leopold, Garden City; chairman of program committee, H. S. Claypool, Syracuse.

L. O. Martin, Dodge City, spoke on "Convulsions and Coma." V. A. Leopold reported on the Kansas State convention recently held at Neodesha.

Topeka

Genevra E. Leader reports that the following officers were elected at the November meeting as follows: President, L. E. Thomas; vice-president, C. E. Brown; secretary-treasurer, E. Jane Letts.

F. M. Godfrey, retiring president, reported on the recent Kansas State convention. Dr. Thomas gave a talk on special diets.

Wichita

A Clinic Day was held December 8, at the Southwestern Osteopathic Hospital. Surgical, general, and eye clinics were held. The following doctors took part: Wil-

born J. Deason, H. C. Wallace, George M. Laughlin, and W. S. Corbin.

MAINE

Southern Maine

A meeting was held at Kennebunk, November 10, in the offices of M. F. Hall. A symposium on infectious diseases was given by Doris W. Perkins, Saco, and F. J. Chase, Pittsfield, Mass.

MASSACHUSETTS

Mystic Valley

A meeting was held at Waltham, November 9.

MICHIGAN

Osteopathic Physicians and Surgeons Foundation of Michigan

The following officers were elected at a recent meeting: Chairman, Walter H. Gillmore (reelected); vice-chairman, O. O. Snedeker; secretary-treasurer, Walter P. Bruer; trustees, Harry F. Schaffer, and W. Leroy Skidmore. All officers reside in Detroit.

Lansing

A meeting was held November 22 at the Kerns Hotel.

MISSOURI

Buchanan County—St. Joseph

At the November 16 meeting William P. Lenz spoke about offering the services of St. Joseph osteopathic physicians to relieve the distress of indigent patients.

At the November 23 meeting W. E. Hartsock gave a talk on the value of ultraviolet irradiation.

Kansas City

At the November 15 meeting, Stratton D. Brooks, M.D., executive director of the Order of DeMolay, spoke on "Youth and Citizenship."

Northwest Missouri

Clifford L. Steidley, Savannah, reports that a meeting was held November 10 at Savannah. Dinner was served at the Woodman Hall followed by a short business session. The following program was given: E. D. Holme, "Osteopathy in Acute and Infectious Diseases"; F. P. Walker, "Obstetrics"; T. O. Pierce, "Surgical Discussion," all of St. Joseph. Dr. Steidley was acting chairman for the meeting.

Southwest Missouri

The November 16 meeting was held at Joplin. Myrtle M. Dickey was chairman, and the following program was given: T. M. King, Springfield, "Demonstrations and Technic of Sinus Drainage"; E. G. Story, Carthage, "Clinics at the State Convention"; Ida Johnson Parson, Monett, "Fever Diseases"; A. B. Wheeler, Carthage, "X-ray Diagnosis." The musical program was given by Mrs. Nell Dwyer, and Miss Ruth Fountain.

The next meeting will be held at Carthage, January 18, with Dr. Story in charge.

West Central

The November 4 meeting was held at Marshall. George Fulton of the Kirksville College, lectured on the endocrine glands. Dr. Fulton's wife, Stella Correll Fulton, is a sister of "Andrew Brown" of the radio team Amos and Andy.

NEBRASKA

Southwestern Nebraska

A meeting was held at Omaha December 4. The speakers were: Scott Wisner, North Platte; Harold Fenner, North Platte; Ivan P. Lamb, Palisade; and Donald Furman, McCook.

NEW JERSEY

Southern New Jersey

William H. Hart, Moorestown, secretary, reports that a meeting was held at Bridgeton, November 19. The principal speaker was Henry Bellew, Philadelphia, who spoke on "Diet and Its Relation to the Practice of Osteopathy."

The next meeting will be held at Woodbury.

NEW YORK

Hudson River

A meeting was held at the home of Alice A. Brown, Troy, December 3. The principal speakers were A. W. Bailey, Schenectady, and John R. Pike, Albany.

New York City

A meeting was held December 15 with the following program: Alice C. Boughton, Ph.D., "Why People Want Birth Control," discussion by Thomas R. Thorburn, Mildred E. Perkins; Joseph George Coffin, Ph.D., "Vitamins Brought Up to Date." A Christmas party is being planned for the Osteopathic Clinic.

Rochester District

Edward L. Spitz-Nagel, secretary, reports that a meeting was held December 8 when a bountiful turkey dinner was served. After the dinner, Helen Thayer-Coomber entertained the society with an old fashioned Christmas party.

OHIO

Akron District

A meeting was held at Massillon, December 7. The principal speaker was James O. Watson, Columbus, who spoke on "The Examination and Treatment of the Diseased Prostate Gland."

Cleveland District

Charles A. Purdum, secretary, reports that the regular monthly meeting was held December 5. Following the business meeting J. W. Keckler spoke on "Allergy in Skin Diseases." The society is investigating the possibilities of establishing an osteopathic dispensary.

Central Ohio

A meeting was held at Columbus, November 10. The principal speakers were H. J. Weaver, trainer for the St. Louis Cardinals, and Harold J. Clybourne.

Loraine—Erie County

The November 30 meeting was held at Loraine. The principal speaker was Wallace M. Pearson, Cleveland.

OKLAHOMA

Central Oklahoma

L. L. Mincks, Okemah, secretary, reports that a meeting was held at Muskogee, November 12, with the following program: Gil Myers, Tulsa, "Acute Sinusitis"; T. H. Conklin, Stigler, "Infections of the Middle Ear"; R. C. Boyd, Wewoka, "Diseases of the Throat"; H. E. Beyer, Weleetka, "Rhiniform Treatment of Nasal Infections"; H. E. Montague, Muskogee, "Legislative Problems."

Kay County

A meeting was held at Tonkawa, November 10. A business meeting was held in the offices of F. C. Davis. The speakers included the following: E. Paul Harris, Blackwell; W. W. Palmer, Blackwell; Dr. Davis, D. B. O'Conner, Tonkawa; R. V. Barrick, Blackwell, and C. D. Ball, Blackwell.

Oklahoma County

At the November 17 meeting of the Oklahoma County Association of Osteopathic Physicians and Surgeons at Oklahoma City, officers were elected as follows: President, E. Paul Harris; vice-president, C. A. Palme; secretary, Vera Buchheit; committee in charge of state convention, O. L. Jordon, C. E. Daily, and C. F. Stauber.

PENNSYLVANIA

Lehigh Valley

The November 17 meeting was held at Stroudsburg. Wilson Beam, Easton, president, presided over the meeting. Following a business meeting Harvey R. Haupt, Reading, gave a paper on "Psychotherapy."

Philadelphia County

At the November 17 meeting, Mason L. Beeman addressed the society on "Osteopathic Technic."

Weekly broadcasts are given over station WPEN.

On November 11, Edwin H. Cressman spoke on "The Osteopathic Care of Acute Diseases"; on November 18, Edward G. Drew spoke; on November 25, H. Walter Evans spoke on "Osteopathic Care of Maternity Cases," and on December 9, John E. Rogers, Oshkosh, Wis., who was in Philadelphia to inspect the college of the A.O.A.

RHODE ISLAND

State Association

Mary C. Mowry, Providence, secretary, reports that the regular meeting was held November 10 at the Rhode Island Osteopathic Hospital. A dinner was given by the Osteopathic Hospital Association following which Foster C. True, Philadelphia, spoke on "Fractures, Their Diagnosis and Treatment."

Newport County

At the November 22 meeting at Newport, officers were elected as follows: President, C. Edward Farnum; secretary, A. J. Pekow. The work of the Newport Osteopathic Clinic was discussed during a review of the society's activities.

TENNESSEE

East Tennessee

F. C. Schaeffer, Knoxville, secretary, reports that a meeting was held in the offices of Harold W. Roberts, Morristown, December 4. Officers were elected as follows: President, Charles MacFadden, Johnson City; secretary, Dr. Schaeffer.

The next meeting will be March 1 at Kingsport.

TEXAS

Lower Rio Grande Valley

Amorette Bledsoe, Brownsville, secretary, reports that the regular monthly meeting was held in the offices of Jacobine Kruze, San Benito, November 26.

The next meeting will be held December 17 at Mercedes.

North and East Texas District

C. E. Logan, Dallas, reports that the semi-annual convention of the North and East Texas District associations was held at Dallas, November 26, at the Sparks Hospital and Clinic. The program was as follows: William Roddy, Taylor, "Osteopathic Treatment of Pneumonia"; H. B. Mason, Temple, "Case Histories and Focal Infection"; H. R. Coats, Tyler, "Gastric and Duodenal Ulcers"; V. A. Kelley, Waco, "Blood Pressure"; C. H. Hancock, Denton, "Care of Athletic Injuries"; A. D. Ray, Cleburne, "Drainage of Gallbladder and Biliary System"; John F. Clark, Greenwell, "Intestinal Parasites"; Iva Mae Caruthers-Whitehead, Dallas, "The Latest Approved Method of Producing Hyperpyrexia."

Newly elected officers of the North Texas association are as follows: President, J. G. Brown, Mineral Wells; vice president, T. R. Krohn, Wichita Falls; secretary-treasurer, W. H. Locke, Gainsville. The next meeting will be held at Mineral Wells in March.

Newly elected officers of the East Texas association are as follows: President, James T. Hagan, Longview; vice president, L. E. Griffin, Nacogdoches; secretary-treasurer, A. H. Porter, Henderson. The next meeting will be held at Tyler in January.

Southeast Texas

B. L. Livengood, Bay City, reports that a meeting was held at his city, December 3, at which he was host. A professional program and a dinner was given at the Bay Tex Hotel.

The next meeting will be held at Houston in March.

WASHINGTON

Pierce County

The regular monthly meeting was held November 15 in the offices of the Fidelity Osteopathic Clinical Group, Tacoma. H. W. Stotenbur presided. J. M. Ogle read a paper on "Systemic Causes of Rectal Diseases."

Walla Walla Valley

A meeting was held November 16 at the Marcus Whitman Hotel. Members of the Yakima Valley association and their wives were guests. J. H. Robinson, Yakima, was the principal speaker.

WEST VIRGINIA

Ohio Valley

A meeting was held at the offices of M. A. Boyer, Parkersburg, W. Va., November 10. Case histories were presented by Roy W. Eshenaur, Point Pleasant, W. Va., J. D. Sheets, Marietta, Ohio, and T. H. Lacy, Parkersburg.

A meeting was held at Point Pleasant, W. Va., December 8.

WISCONSIN

Milwaukee District

At the December 8 meeting Clifford I. Groff spoke on "Physics of the Foot and Correction of the Structural Deformity by Manipulation."

CANADA

ONTARIO

Ontario Study Group

Edgar D. Heist, Kitchener, reports that a banquet-meeting was scheduled to be held at the Royal York Hotel, Toronto, November 30. The program included Drs. Bach, Henderson, Kerr, MacRae, Jaquith, and Neilson.

BRITISH OSTEOPATHIC ASSOCIATION

The annual general meeting of the British Osteopathic Association was held at the Osteopathic Association Clinic at London, Friday and Saturday, October 21 and 22. The first day was given to various lectures and demonstrations. Dr. Puttick read a paper on "Disseminated Sclerosis." Mr. Hornibrook gave a lecture and demonstration on exercises of the abdomen. Thomas L. Morgan of Paris presented a paper on "New Ideas in the Treatment of Asthma." Case histories were presented by Ray M. Russell and Carl M. Cook. An osteopathic motion picture was shown, "An Introduction of the Cannula," by Walter V. Goodfellow, Los Angeles, and a motion picture illustrating "Colles Fracture."

At the business meeting, it was reported that the American Osteopathic Association has discontinued the Affiliation Agreement and that membership in the American Osteopathic Association on the part of British Osteopathic physicians will now be $10 a year instead of $6. It was therefore agreed that the British Osteopathic Association dues should be reduced from five pounds, five shillings to three pounds, three shillings.

An appeal was made to the members to give more generously of their time to the clinic and it was shown that the honorary staff of the clinic must be enlarged as the services of the house osteopathic physician would be dispensed with after November 1 for reasons of economy. It was decided to maintain the headquarters of the British Osteopathic Association at the clinic with a separate file under control of the officers and a separate entry in the telephone directory. The association is to pay the clinic an annual rental of fifty pounds.

The names of chief officers were given in the December JOURNAL. Members of the Council and the various committees are as follows: Council members, Russell Alexander, A. E. Burrowes, Carl M. Cook, Harvey Foote, W. Hargrave-Wilson, Dora Sutcliffe Lean, George Macdonald, E. T. Pheils, Ray M. Russell, A. L. Sikkenga; legislation, chairman, E. T. Pheils, members, William Cooper, A. L. Sikkenga; publicity and ethics, chairman, Norman Macdonald, members, J. J. Dunning, Ralph L. West, O. B. Deiter; education and research, chairman, A. E. Burrowes, members, Jean Johnstone, Ethel Mellor; finance, chairman, Lynn S. Abbott, members, R. W. Puttick, Robert E. Nye; membership, chairman, Ray M. Russell, members, F. Davis, Russell Alexander; clinics, chairman, E. T. Pheils, members, George Macdonald, A. E. Burrowes, Carl M. Cook, Flavel Cook, O. B. Deiter, Norman Macdonald, S. G. Semple, ex officio, R. W. Puttick; program, chairman, R. W. Puttick, members, O. B. Deiter, Dora Sutcliffe Lean; special committee, chairman, Carl Cook, members, J. J. Dunning, O. B. Deiter, M. R. Laing.

ARE YOU AS GOOD AS JANUS?

THE old Roman god Janus, after whom our month of January was named, was shown with two heads—one looking forward, one backward. Janus, therefore, had something very few of us have—hindsight and foresight. Many of us look backward over past mistakes and make good resolutions with our forward look.

We all yearn and aspire, but very few of us determine. We often fail to "cash in" on the capitalization of our possibilities. If you have not used THE OSTEOPATHIC MAGAZINE or OSTEOPATHIC HEALTH in the past as a means of stimulating your practice now is the time for you to let us co-operate with you on a plan for the future. Hindsight, they say, is better than foresight. It is, when you can improve on the picture it presents. We prefer foresight, and we think you do too. If you are as good as Janus —if you can see both ways—write us for samples and prices and let's talk things over. There is no obligation, of course.

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APPLIED PHYSIOLOGY IN THE MANAGEMENT OF CARDIAC DISEASE

—By L. C. Chandler, A.M., D.O.
(LOS ANGELES)

DIAGNOSIS AND TREATMENT OF DIABETES

—By S. G. Bandeen, D.O.
(LOUISVILLE, KENTUCKY)

THE ROLE OF POSTURE IN THE PHYSICAL EXAMINATION

—By Ralph H. Williams, D.O.
(ROCHESTER, NEW YORK)

INFRA-RED IN THERAPY

—By M. H. Simmers, A.B., M.A.
(LOS ANGELES)

ENDOCRIN ASPECTS OF GYNECOLOGY

—By Harriet Connor, D.O.
(LOS ANGELES)

EXERCISES FOR THE CORRECTION OF STRAIGHT SPINE

—By W. C. Bondies, D.O.
(PASADENA, CALIFORNIA)

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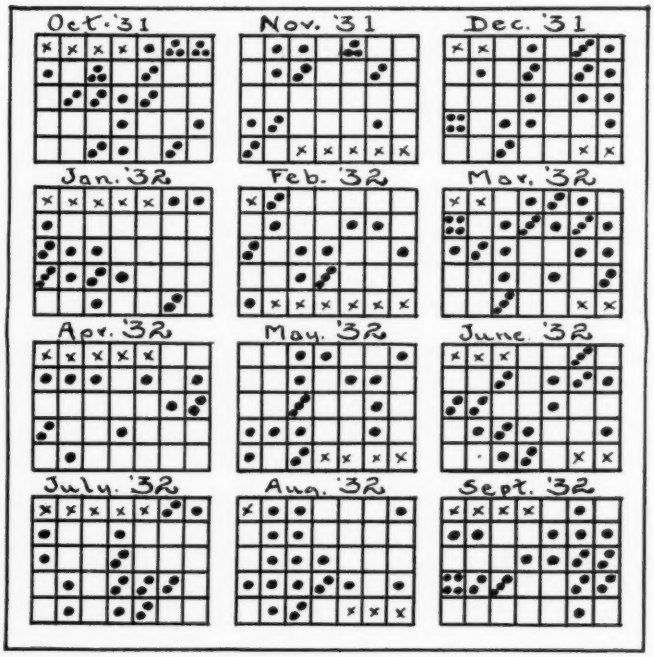

Most Any 7 Days 15, Sept., '32

Least Any 7 Days None, Nov., '31

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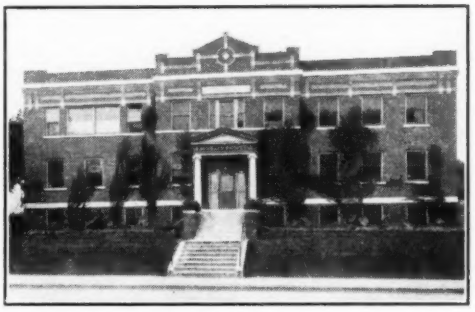

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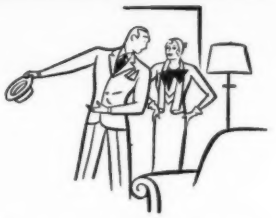

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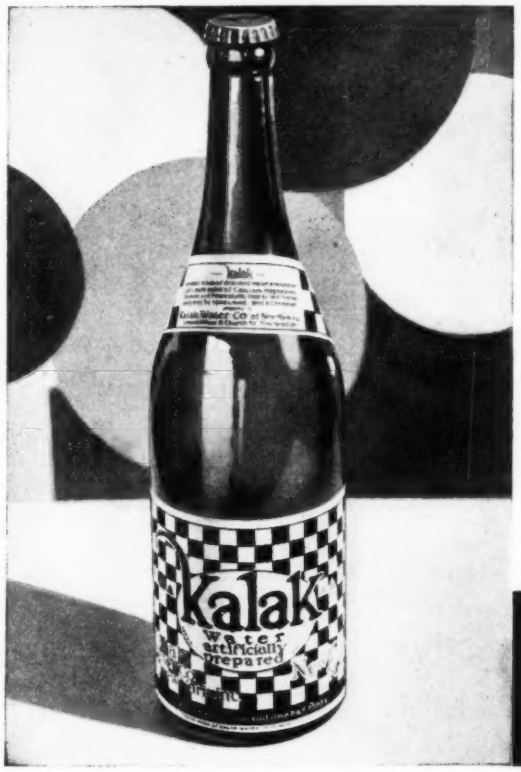

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